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TRENDS IN DECIDUOUS FRUITS: PRODUCTION, PRICES, AND UTILIZATION

Beatrice M. Bain and Sidney Hoos

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TRENDS IN DECIDUOUS FRUITS: PRODUCTION, PRICES, AND UTILIZATION

by

Beatrice M. Bain[1/] and Sidney Hoos[2/]

INTRODUCTION AND SUMMARY

In 1963 and 1964, California was the leader by far in production and value of all fruits and nuts combined. In 1964, for example, this state accounted for about 43 percent of the United States production and value in this important segment of the agricultural economy of the nation. The closest other single state was Florida with about 29 percent of the production and value of fruits and nuts. Raisins and prunes dominate United States production of dried fruits, and 95 percent of this is in California. Further, to illustrate California's importance, it is estimated that about two-thirds of the United States exports of all fruits, nuts, and preparations which include fruits were produced in California. In addition, more than two-thirds of the United States fresh fruit exports come from California. However, canned fruits have exhibited the largest absolute growth in export value in the last decade. The movement of canned peaches and fruit cocktail--the two leading export items, both of which are produced almost exclusively in California--increased appreciably, particularly to Western Europe. Eighty-five percent of the total United States exports of canned peaches and two-thirds of those of fruit cocktail moved to Western Europe in recent seasons.

California does not have a monopoly position in the production of all fruits and nuts; but it can claim all the commercial production of dates, figs, nectarines, olives, persimmons, pomegranates, and almonds. And it is the leading state in volume of production of apricots, avocados, grapes, lemons, peaches, pears, plums, prunes, strawberries, and walnuts. In apricots, for

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example, California has over 90 percent of the production; in plums, most of the production; but in apples, in contrast, less than 10 percent of all commercial production is found in California. In sweet cherries, California has one-fourth of the nation's production, but in pears, over 50 percent. Nearly every state in the United States grows apples commercially and most grow peaches; only one or two other states produce apricots or fresh plums; and only a few states in each geographical region of the United States are grape growers (Table 1).

Scope of This Survey

This report is specifically devoted to several of the leading deciduous fruits mentioned--apples, apricots, cherries, grapes, freestone peaches, pears, and plums. It traces production trends in California and in the United States from 1934 to 1964 for these seven fruits.[1/] In large part, it is a compilation of production and utilization data emphasizing the fresh fruit industry aspects of development and California's role in the production of these specific deciduous fruits. These seven are the major California deciduous fruits which are marketed in fresh form; important additional deciduous fruits in California are clingstone peaches, which are mainly canned, and prunes, which are mainly dried.[2/]

Since short-term instability, imposed by weather and cultural planting and harvesting factors on the one hand and sudden thrusts of competitive effort on the other, is almost of necessity a part of the fruit and vegetable industries, it is important to try to establish some concepts of the longer term trends that are equally important but not always as easily visible to either the industry participant or to the consumer.

Further, because of the relatively high capital investment in land and trees, it is not economically possible (nor often physically feasible) to make extensive short-run adjustments to changing conditions. In addition, the fruit

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1/ For data covering all noncitrus fruit production for the United States, 1935-1965, see U. S. Economic Research Service, Fruit Situation, TFS-159, June, 1966, pp. 21ff.

2/ For a more general overall study, see John A. Jamison, The California Fresh Deciduous Fruit Industry: Structure, Organization, and Practices, University of California, Giannini Foundation Research Report No. 275 (Berkeley, 1964), 161p.

TABLE 1

Production of Selected Deciduous Fruits: Region and Selected States, 1964

Production area	Apples	Apricots	Sweet cherries	Grapes	All peaches	Pears	Plums	Prunes
	thousand tons							
Region								
Northeast and East[a]	695.0	[b]	9.6 (2)[c]	175.1 (4)	167.6 (8)	24.6 (3)		
Midwest[a]	656.9		22.0 (1)	74.5 (3)	129.5 (7)	47.5 (1)	11.5 (1)	
South[a]	451.2 (5)			8.6 (3)	144.5 (9)			
Central and Southwest[a]	118.0 (6)	7.0 (1)	9.2 (4)	19.2 (2)	92.9 (7)	15.6 (4)		23.5 (1)
State								
Washington	612.0	9.2	22.2	56.4	43.2	127.0		23.6
Oregon	46.1		25.9		11.0	123.7		24.5
California	297.6	208.0	30.5	3,155.0	1,198.1	395.0	116.0	450.0

a/ Ten states.

b/ Blanks indicate no commercial production reported.

c/ Numbers in parentheses denote number of states (when less than all) in the region producing the indicated fruit.

Source: U. S. Economic Research Service, Fruit Situation, TFS-158, January, 1966, pp. 24 and 25.

grower is particularly subject to "windfall" gains or losses. Thus, fruit is particularly subject to variation in grower returns; it is, therefore, only natural that growers attempt not only marketing methods to compensate for this instability but utilization channels with which to substitute or compensate for the fresh fruit industry variability. Long-run data have been gathered and compiled to illustrate change. They reflect important developments in production, distribution, and marketing of fresh fruit and emphasize California's role in these matters. They serve as background for those who wish to compare, analyze, and evaluate these trends. In addition, the changes in the relative importance of the fresh use of these fruits and the additional uses that have developed, particularly since World War II, have been reflected in the figures. Specific factors accounting for changes include such developments as new and improved varieties of the particular product, new areas of production, improved technology of producing and processing, rapid and efficient communication, better facilities for storage, improved packaging, and more dependable transportation. An understanding of the impact of these broad changes can be implemented by a preliminary compilation and study of data such as these offered in this report.

Purpose of the Survey

The essential purpose of a survey of the trends and developments in the deciduous fruit industry in California and in the nation is to provide basic data for evaluation of the prospects faced by producers and distributors of these fruits in the light of regional and national developments. Emphasis is placed on specific California deciduous fruits which have been important in the fresh market. However, in the light of changing developments, data on both processing channels and export trends have been included to provide a picture of the environment in which these deciduous fruits reach the marketplace.

Several tables containing data covering general price trends and per capita consumption changes over time have been included which indicate the broader background influence of population expansion coupled with increased money income and higher standards of living. The influence of rising post-World War II world trade is also implied in several connections. The combined picture is mixed both for California and for the nation as a whole. In the main, the impression is one of great expansion for the three decades since the depression years. The major thrust of the expansion developed during the years

immediately after World War II. The tempering of the expansive trend in the decade since the mid-1950's is also notable. Thus, the last five years have represented something of a stabilization of the peak growth that took place at that earlier time.

Some experts have suggested that the California fresh fruit industry has been static in recent years and has not kept pace with dynamic changes in the consumer preference structure which have been observed over these decades. There have been those who feel that quality of product has not been sufficiently emphasized, that competition from other agricultural or nonfood items has been underrated, or that advertising budgets have not kept pace with needs. These are broader questions that cannot be handled in a relatively modest data compilation such as this report represents. Yet, this study contains the summarization of data which constitute a first step in the direction of answering the more complex questions. At the same time, these data provide specific sources of information for those who need to make general fruit marketing decisions. If, indeed, fresh fruits meet increasing competition, not only from other foods but also because of the substitutability of processed for fresh fruit or the regional characteristics of fresh fruits, it is important for California growers to have the facts of the matter at hand.

Fruit Production Growth Trends--United States and California

To be specific about the California experience with the seven selected deciduous fruits of our survey, total production in California of the combined fruits increased 39.2 percent during the 30 years between 1934 and 1963, measured at an annual average five-year period rate, from 3 million tons of fruit to over 4 million tons annually (Table 2). The bulge of that increase was felt in the period just before 1953. From 1949-1953 to 1959-1963, the increase in production was slightly over 10 percent. However, the increased production was harvested from a steadily decreasing acreage throughout the three decades. From 1934 to 1963, the overall decrease in acreage was 19.4 percent; 11 percent of this decrease was during the period of greatest production increases (through 1953); and 9.6 percent decrease in bearing acreage was experienced in the 10 years after 1953. A little over 600,000 bearing acres are now devoted to these specialty fruit crops in California.

For the entire United States, production of the same seven selected fruits (including all cherries rather than just the sweet varieties) increased more

TABLE 2

Trends and Changes in Production and Marketing of Selected Deciduous Fruits, California
Annual Averages, 1934-1938, 1949-1953, and 1959-1963; Annual, 1964 and 1965

	Annual average for five-year periods			Percent change			
	1934-1938	1949-1953	1959-1963	1934-1938 to 1959-1963	1949-1953 to 1959-1963	1964	1965
Production (thousand tons)	3,012.1	3,786.7	4,194.0	+39.2	+10.7	4,516.8	5,045.7
Bearing acreage (thousand acres)	732.0	652.7	590.2	-19.4	- 9.6	617.9	619.4
Yield (tons per bearing acre)	4.1	5.8	7.0	+70.8	+20.7	7.3 a/	8.1 a/
Fresh sales (thousand tons)	853.5	922.7	873.5	+ 2.4	- 5.3	873.5	934.3
Fresh sales as percent of total sales	28.4	24.5	20.7	-33.8	-13.7	20.7	20.7

a/ Roughly estimated by dividing combined production by combined bearing acreage.

Source: See Statistical Sources, infra, pp. 171ff.

steadily over the entire three decades; and changes were neither as great nor as sharp as those of California. For the nation as a whole, total production of the specific fruits increased 16 percent between 1934 and 1963 (on an annual average five-year period basis); and the greater increase came after the mid-point since 9 percent increase was noted in the decade 1953-1963. The shift of production to California can be clearly documented as we note that a little over 41 percent of the total United States deciduous fruit production of these seven fruits in the 1930's was harvested in California; whereas by 1949-1953, 48.7 percent of the production was grown within the state. The major shift in location having been made, the percentage of harvested fruit did not change materially through 1963. At the present time, 48.8 percent of all United States production of these selected deciduous fruits is currently grown on the 600,000 acres of California's orchards and vineyards devoted to grapes and these six deciduous tree fruits.

Outstanding Yields in California

It is important to note and to emphasize in recognizing the established position of California producers of the fruits we are reviewing that one definite conclusion to be drawn about California's role in the industry is the outstanding yield that has been developed from the smaller total bearing acreage. It is not possible to compare this with the total United States yield since bearing acreage figures are not available on a nationwide basis. California's combined yield for these deciduous fruits, which was 4.1 tons per acre--somewhat above the national average in the 1934-1938 period for which United States acreage figures by separate fruits were available--has increased in this 30 years by nearly 71 percent so that seven tons or more per acre of deciduous fruit are, on the average, characteristically harvested from each California bearing acre.

Fresh Sales Over the Three Decades

It is clear that California does not concentrate on fresh sales of these deciduous fruits and grapes, at least in volume terms. As total production of these specified fruits has shifted to California, it has been an increase in the processing of these products that has been the major growth segment. All United States fresh sales of fruits have been decreasing in volume over these three decades. In the 1934-1938 period, over 56 percent of all United States sales of the seven fruits were fresh sales. This had dropped to less than 47

slightly over 43 percent of all sales of these selected fruits in the United States were in the fresh market.

California fresh sales were also decreasing over these years as a percentage of the total California sales of these seven fruits. In the five-year period, 1934-1938, 28.4 percent of the total California sales of these selected fruits went into fresh-market channels. By 1959-1963, only 20.7 percent did so. This is true despite the greatly increased population in California itself and a total production increase in California alone of 39.2 percent in tonnage volume of these particular fruits.

Of all the remarkable changes over the 30 years surveyed, California's volume of fresh sales of the selected fruits probably represents the most stable figure over time. If the three decades are taken as a whole, California fresh sales were only 2.4 percent higher in 1963 than they had been in 1934 despite all production increases. In annual figures, this represented an interesting rise and then fall of fresh sales volume during the 1950's. The 1964 California production was an increase of nearly 10 percent over the annual average for the preceding five years, and the fresh sales figure was above the peak levels of earlier years and represented about a 6-percent increase over the annual average fresh sales of the previous five years.

Problems for Fresh Fruit

Several developments seem to be clear: (1) Fresh consumption of the fruits under consideration has been decreasing throughout the last 30 years; (2) concurrently there has been a geographical shift to California production as total United States production has increased; and (3) a definite pattern of changed utilization has also been evident. Such increases in processing utilization may represent in part an attempt of commercial growers to look for the more economically stable outlet as other changes are being made.

Since it is true that the content of the "market basket" is changing in general and that there is increasing demand for convenience foods, it may be disturbing, but not particularly surprising, that substantial declines are found in fresh fruit consumption despite increasing personal income and that processing becomes a larger outlet for those producing fruit as the convenience aspects appeal to the more affluent buyers. We shall return to this when consumption trends are discussed.

The changes in the dimensions of the economy are of such magnitude in the three decades under consideration that presentation in relative terms is hampered. The comparability over time is also made the more difficult because of product innovation and technical changes in the fruit industry as well as the expansion of the economy and inflationary pressure over the more recent years. For example, if one considers increases in total personal disposable income in this 30 years--1934 to 1963--the period 1959-1963 represents more than four and one-half times the annual average total personal disposable income in money terms over that of the 1934-1938 period. Measured in 1958 prices, total personal disposable income is over one and one-half times the early figure (Table 3).

In 1964, United States personal disposable income was over $438 billion. This was more than $2,200 per capita for the United States, and of this an estimated $418 per person was spent on food (excluding alcoholic beverages). This is over 18 percent of each individual's personal disposable income. (Table 4 shows United States per capita disposable income over the years.)

Population by the 1960's had reached more than 190 million. Measured in terms of millions eating out of civilian supplies, this is an increase of more than 40 percent over the 1930's even when including only the 48 states (Table 5). Total food expenditures had climbed to over $80 million by 1964, but this expenditure was, in turn, a steadily smaller percentage of personal disposable income after 1958. In that year, 20.9 percent of disposable income was spent for food; in 1964 and 1965 this had fallen to an average of 18.3 percent.

Our review of these dimensions of the economy at this point is a background for the trends in consumption of fruit over the 30 years of the study presented here. Our long-run interest centers on population and income growth as they are related to increases in fruit production, but the realities of consumption decline modify what might otherwise look like a picture of permanent expansion.

Fruit Consumption--Three Decades' Experience

When consumption of fruit is observed in the light of the parameters of economic expansion discussed above, it is important to remember just what is being measured and what the difficulties in measurement are. But first, there is some advantage to suggesting the overall framework within which the selected fruits we are discussing here are viewed (Table 6).

TABLE 3

Changes in United States Total Personal Disposable Income at Current Prices and in Constant (1958) Dollars
Annual Averages, 1934-1938 to 1959-1963; Annual, 1964 and 1965

Period	Current prices			Constant (1958) dollars		
	Total personal disposable income (annual average for five-year periods)	Percent change		Total personal disposable income (annual average for five-year periods)	Percent change	
		Each period	Total 30-year period		Each period	Total 30-year period
	billion dollars			billion dollars		
1934-1938	62.8			139.5		
1939-1943	97.8	+55.7		189.7	+36.0	
1944-1948	163.1	+66.8		227.2	+19.8	
1949-1953	222.6	+36.5		255.0	+12.2	
1954-1958	290.6	+30.5		303.8	+19.1	
1959-1963	368.3	+26.8	+486.6	354.5	+16.7	+154.1
1964	438.1			406.5		
1965	472.2			430.8		

Source: U. S. Office of Business Economics, The National Income and Product Accounts of the United States, 1929-1965: Statistical Tables, A Supplement to the Survey of Current Business, August, 1966, 165p.

TABLE 4

Changes in United States Per Capita Personal Disposable Income at Current Prices and in Constant (1958) Dollars
Annual Averages, 1934-1938 to 1959-1963; Annual, 1964 and 1965

Period	Current prices			Constant (1958) dollars		
	Per capita personal disposable income (annual average for five-year periods)	Percent change		Per capita personal disposable income (annual average for five-year periods)	Percent change	
		Each period	Total 30-year period		Each period	Total 30-year period
	dollars			dollars		
1934-1938	489			1,087		
1939-1943	730	+49.3		1,417	+30.4	
1944-1948	1,146	+57.0		1,600	+12.9	
1949-1953	1,440	+25.7		1,651	+ 3.2	
1954-1958	1,725	+19.8		1,805	+ 9.3	
1959-1963	2,005	+16.2	+310.0	1,931	+ 7.0	+77.6
1964	2,280			2,123		
1965	2,427			2,232		

Source: U. S. Office of Business Economics, The National Income and Product Accounts of the United States, 1929-1965: Statistical Tables, A Supplement to the Survey of Current Business, August, 1966, 165p.

TABLE 5

Changes in United States Population: Total[a/] and Population Eating Out of Civilian Supplies[b/]
Annual Averages, 1934-1938 to 1959-1963; Annual, 1964 and 1965

Period	Total population (annual average for five-year periods)[c/]	Percent change		Population eating out of civilian supplies, adjusted (annual average for five-year periods)	Percent change		Population eating out of civilian supplies, current (annual average for five-year periods)[d/]	Percent change	
		Each period	Total 30-year period		Each period	Total 30-year period		Each period[d/]	Total 30-year period[d/]
	millions			millions			millions		
1934-1938	128.2			128.2					
1939-1943	133.6	+4.2		131.0	+ 2.1				
1944-1948	142.1	+6.3		136.8	+ 4.4				
1949-1953	154.3	+8.6		151.6	+10.8				
1954-1958	168.3	+9.0		165.3	+ 9.0				
1959-1963	183.5	+9.1	+43.2	180.2	+ 9.0	+40.7	180.9	+9.4	+41.2
1964	192.1			188.5			189.3		
1965	194.6			191.0			191.9		

a/ Estimates of Bureau of the Census, not adjusted for underestimation. Includes armed forces averages and, after July, 1960, includes Alaska and Hawaii (50 states).

b/ Prior to 1941, military use not available; 1941-1946 adjustments made for armed forces; since July, 1946, data are civilian population estimates of Bureau of the Census (48 states).

c/ For consumption data on a calendar-year basis, July 1 population is used.

d/ Includes Alaska and Hawaii.

Source: U. S. Economic Research Service, U. S. Food Consumption: Sources of Data and Trends, 1909-63, Statistical Bulletin No. 364, June, 1965, 194p., and annual supplements, Table 100.

TABLE 6

Changes in United States Per Capita Consumption of Selected Deciduous Fruits
Population, and Personal Disposable Income
Annual Averages, 1934-1938, 1949-1953, and 1959-1963; Annual, 1964 and 1965

	Annual average for five-year periods			Percent change			
	1934-1938	1949-1953	1959-1963	1934-1938 to 1959-1963	1949-1953 to 1959-1963	1964	1965
Per capita fresh consumption (farm weight in pounds, calendar year)[a]	59.5	46.1	37.2	- 37.5	-19.3	35.2	32.3
Per capita canned consumption (product weight in pounds, pack year)[b]	4.9	8.2	10.2	+108.2	+24.4	9.8	9.2
Per capita dried consumption (product weight in pounds, pack year)[c]	4.7	3.1	2.4	- 49.8	-22.6	2.4	2.5
Per capita juice consumption (product weight in pounds, calendar year)[d]	1.1[e]	1.8	3.6	+ 23.3	+95.6	4.0	2.8
Population eating out of civilian supplies (millions)	128.1	151.6	180.9[f] 180.2[g]	+ 41.2[f] + 40.7[g]	+19.3[f] +18.9[g]	189.4[f] 188.5[g]	191.9 191.0
Total personal disposable income (billions of current dollars) (constant 1958 dollars)	62.8 139.5	222.6 255.0	368.4 354.5	+486.3 +154.0	+65.4 +39.0	436.7 406.5	469.1 430.8

(Continued on next page.)

TABLE 6--continued.

a/ Includes all cherries.

b/ Does not include grapes.

c/ Does not include cherries; does include raisins, currants, and prunes.

d/ The period 1934-1938 not quoted for apples; therefore, not covered. Juices include apple, grape, and other nectars. Year for grapes begins November before year quoted after 1948. Some changes may be due to definitional difference in recent years.

e/ For five-year period, 1939-1943.

f/ Includes Alaska and Hawaii from 1960.

g/ Does not include Alaska and Hawaii.

Source: U. S. Economic Research Service, U. S. Food Consumption: Sources of Data and Trends, 1909-63, Statististical Bulletin No. 364, June, 1965, 194p.; and Supplement for 1965, 28p.

In an earlier study,[1/] perhaps because of data difficulties, it had seemed that total per capita disappearance[2/] of fresh deciduous fruits was holding steady over the years surveyed. By now it seems clear that not even total per capita consumption of deciduous fruits is able to sustain the levels of the prewar years (Table 7). A steady decline has been observed that has brought per capita total disappearance of all noncitrus fruits from 108.4 pounds (annual average retail fresh-weight equivalent) in the 1934-1938 period down to 92.4 pounds per capita in the 1959-1963 span. This is an overall decline of 14.8 percent, while population increased at least 40 percent, and disposable money income (at current prices) more than quadrupled. This observation covers all recorded deciduous fruits and, therefore, includes many fruits not included in our specific selection of seven. Nonetheless, the direction of the change is very clearly the same as that of the selected deciduous fruits covered in this study, and the magnitude may be quite similar. The decrease in the last decade was over 8 percent; 1964 and 1965 seem to indicate a continuing downward trend, so it is not difficult to assume that continuing decreases in total per capita disappearance for deciduous fruits will be recorded.

Even greater declines are found in fresh per capita consumption of deciduous fruits. As noted, the total disappearance discussed covered all relevant deciduous fruits; and of that total, a decreasing percentage of fresh fruits was consumed over the past 30 years. That is, fresh per capita consumption was 80 percent of total per capita consumption in the 1934 period, and by the end of the three decades it was 61.3 percent of that total. Fresh fruit consumption is thus decreasing at a more rapid rate than total disappearance--and both have been in constant decline.[3/]

To speak of more general reasons for this decline before turning to the specific deciduous fruits of this study, it has been noted that there is a general trend toward the convenience foods; and processed fruits are

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1/ Sidney Hoos and Varden Fuller, Trends and Prospects: Deciduous Fresh Fruits, University of California, Giannini Foundation Mimeographed Report No. 176 (Berkeley, 1955), 122p.

2/ A more accurate term for "consumption" in the context of this study. The two expressions are used interchangeably.

3/ Recent preliminary figures indicate this decline may be modified in 1966 and 1967 by increases in processed fruit consumption. The most noticeable increases, however, are in citrus rather than deciduous fruits.

TABLE 7

Changes in United States Per Capita Consumption of All Noncitrus Fruits
Annual Averages, 1934-1938 to 1959-1963; Annual, 1964 and 1965

Period	Total consumption				Fresh consumption				Percent, fresh of total
	Retail, fresh-weight equivalent	Percent change			Retail, fresh weight	Percent change			
		Each period	Longer periods	Total 30-year period		Each period	Longer periods	Total 30-year period	
	pounds				pounds				
1934-1938	108.4				86.8				80.0
1939-1943	106.3	-2.0			80.1	- 7.8			75.3
1944-1948	102.8	-3.3			75.2	- 6.2			73.1
1949-1953	100.5	-2.3	-7.3		68.9	- 8.4	-20.7		68.5
1954-1958	93.3	-7.7			58.5	-15.1			62.7
1959-1963	92.4	-0.9	-8.1	-14.8	56.7	- 3.1	-17.8	-34.7	61.3
1964	90.2				54.1				59.9
1965	88.9				52.3				58.8

Source: U. S. Economic Research Service, U. S. Food Consumption: Sources of Data and Trends, 1909-63, Statistical Bulletin No. 364, June, 1965, 194p; and Supplement for 1965, 28p.

essentially such foods. There has been a pronounced shift from the utilization of fruits in their fresh form to processed forms. This shift may be the result of simultaneous changes in several factors. The development of new or modified product forms--combinations of fruit juices or the "invention" of fruit cocktail would be cases in point--or the availability of new processing technology, such as freezing for fruits and fruit pulp, can be cited. Changes in relative consumer prices of different product forms are, of course, important. In the aggregate, the prices of deciduous processed fruits have averaged under the prices of deciduous fresh fruits, particularly in the more recent past.[1/]

It is difficult to evaluate consumer tastes and preferences in measurable terms. It may be that changing modes of living, including kitchen appliance changes, working mothers, and shopping conveniences--all familiar by now--are still major factors. The desire for recognizable branded goods, coupled with quality improvement in processed products, among a host of other constitutional influences, may be more causative. It is clear that a combination has evolved that favors the processed product rather than the fresh one. Marketing developments for deciduous processed products have certainly followed the line of large-scale intensive merchandising and advertising. Whether this is the major reason for the decreases in fresh utilization of deciduous fruits is difficult to determine. It can also be shown, at least during recent years, that the consumer prices of processed fruits have been low relative to prices of fresh fruits. To what extent this alone has induced the shift to processed product forms is also difficult to determine.[2/]

As far as future prospects in the same direction are concerned, it has been noted in considering fruits and vegetables in the aggregate that income elasticities indicate that the shift in consumption during the last decade from fresh to processed products will continue and that the largest increases will be in frozen products. The shift, of course, will be affected by changes in the price of processed fruits and vegetables relative to those of fresh

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1/ U. S. Economic Research Service, Agricultural Markets in Change, Agricultural Economic Report No. 95, July, 1966, Chap. 8, pp. 194ff.

2/ Kenneth R. Farrell, "Recent Changes and Current Economic Problems in the California Tree Fruit, Nut and Grape Industries," Presented at the Symposium for California Fruit and Nut Industries on Adjustments in a Changing Economy, April 10-11, 1963 (Berkeley: Giannini Foundation of Agricultural Economics, University of California, 1963), p. 16.

products.[1/] And it is also true that in the technological innovations thus far made in the freezing industry, fewer products have been developed using deciduous fruits, as such, than in other segments. This does not necessarily mean that such product changes will not evolve.

Increases in processed fruit consumption have not compensated for fresh fruit consumption decreases in the aggregate. Thus, total per capita consumption has been declining. This is in no sense inevitable, but there is no sign of a reversal being either self-inducing or automatic in the present trends of the deciduous fruit industry. It must also be noted that changes involving the fruit industry as a whole may not be characteristic of the deciduous fruit industry segment.

To turn specifically to the consumption figures for fruits considered in this study, it has been thought necessary in the interest of comparative accuracy to break down consumption by utilization as has been done in Table 6. It is quite clear, therefore, as we follow the trends in the seven fruits, that fresh fruit consumption fell precipitously--more than 37 percent between 1934 and 1964, and nearly 20 percent of that decrease was in the last decade. During the same three decades, consumption of canned fruits more than doubled; although the rate of increase in the past decade has been slowing down. Dried fruits, however, have decreased in per capita consumption by nearly 50 percent, while fruit juices have become a very important product with increases more than doubling the per capita consumption of the mid-1930's.

Freezing has become an important facet for fruit and vegetable products, as such, but among our selected fruits only cherries, apples, and freestone peaches are frozen in quantity; the freezing per capita consumption figures are shown in summary in Table 8 for comparative purposes. In combination with juices, freezing of fruits may be growing in importance, although actual figures do not as yet confirm this trend. Freezing should be considered in prospect, although in retrospect the impact is not sufficient to be recorded in summary as yet.

Broad social and economic forces suggest continued population growth, rising standards of living, and increased urbanization. Continuing change in

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1/ U. S. Economic Research Service, Agricultural Markets in Change . . ., p. 211; see, also, pp. 194-213 for further reflections on change to processing utilization.

TABLE 8

United States Per Capita Consumption of Frozen Fruits and Juices
Annual Averages, 1939-1943 to 1959-1963; Annual, 1964 and 1965

Period	Annual average for five-year periods				
	Apples	Apricots	Cherries	Grapes and pulp	Peaches
	pounds				
1939-1943	.05	a/	.28	.64	.06
1944-1948	.21	.22	.42	.04 b/	.34
1949-1953	.26	.05	.58	.52	.18
1954-1958	.39	.03	.61	.10	.21
1959-1963	.38	.06	.68	.08	.27
1964	.41	.07	.71	.08	.32
1965	.44	.06	.62	.12	.24

a/ Not reported for full five-year period.

b/ Four-year average; none recorded for 1944.

Source: U. S. Economic Research Service, U. S. Food Consumption: Sources of Data and Trends, 1909-63, Statistical Bulletin No. 364, June, 1965, and annual supplements, Table 16.

consumer tastes are also indicated. Continuing shifts in consumption from fresh to processed fruits and vegetables are also likely, particularly if the consumer pays less for the same foods in the processed form.

Further, with very special reference to California, although price to grower may be decreasing, the increases in production (coupling increases in yield per bearing acre with some signs of stability of bearing acreage) have offset thus far decreases in price so that the total value per acre (computed simply by production times price to grower) is still maintained. In addition to the stability offered by the processed product, the possibilities exist for continued cost reduction with further technological changes. Frozen fruit exploitation and the future developments indicated by early experimentation with new fruit utilization, such as the freeze-drying of deciduous fruits, all predicate processed product gains rather than fresh fruit consumption increases as such. Thus, both from the producers' and the consumers' viewpoint, it is to be expected that continued affluence may mean continued processing increases but not necessarily increased total fruit consumption. This situation may well continue into the future. At least the trends outlined in this survey would so portend.

TRENDS IN DECIDUOUS FRUITS

Changing Position of Deciduous Fruit Production and Marketing

In the light of rising standards of living in the United States and abroad coupled with population growth, the assumption would be for a continually expanding market for the fresh fruit industry. The relevant questions are these:

1. What have been the trends in production, acreage, and yield?
2. What have been the trends in grower prices and sales for fresh market? for total sales? Is there a divergence that is growing?
3. What have been the trends in per capita consumption? To what extent have these trends marked changes in fresh use of the selected deciduous fruits we are surveying?

These broad questions provide the substance for this report. The overall view is taken for a 30-year period showing trends of 5-year averages. Such averages cancel the peculiarities of individual years and set forth the basic underlying trends in which we are interested. Yet, it should be borne in mind that the individual years and seasons experienced by growers and shippers are very real and quite relevant. Two recent years (1964 and 1965) are included in all of our tables for comparative purposes.

Production

Table 9 offers an overview of the production for United States and California from which trends can be deduced for the three decades under surveillance and for two recent single years, 1964 and 1965. This is the pattern for all the summary tables of this section and will be supplemented in the next chapter by each fruit, discussed individually. The differing production trends in the various fruits can be observed in this way.

During the past three decades, national apple production has been relatively stable with the exception of the World War II years. Some evidence of a slight downward trend over the years was changed by the annual average for the last five-year period, and recent annual figures show increases. In commercial tonnage, measured by volume alone, apples were at one time the leading deciduous fruit in the nation; they are currently displaced by grapes.

TABLE 9

Production of Selected Deciduous Fruits, United States and California
Annual Averages, 1934-1938 to 1959-1963; Annual, 1964 and 1965

	Annual average for five-year periods						1964	1965
	1934-1938	1939-1943	1944-1948	1949-1953	1954-1958	1959-1963		
	thousand tons							
Apples								
United States	2,895.9	2,817.2	2,443.6	2,686.8	2,717.8	2,808.5	3,159.7	3,265.0
California	188.4	176.7	198.4	184.5	215.6	234.9	297.5	211.2
Apricots								
United States	229.6	201.0	265.9	203.2	187.6	205.4	220.1	226.0
California	216.0	179.4	235.4	187.6	167.2	192.4	207.0	225.0
Cherries								
United States	139.7	166.3	191.2	230.4	213.5	222.2	392.9	264.1
California[a]	21.3	23.6	30.1	32.3	27.5	21.5	31.3	31.5
Grapes								
United States	2,346.0	2,600.2	2,936.2	2,903.2	2,866.6	3,314.2	3,478.0	4,351.3
California	2,118.6	2,394.8	2,772.4	2,709.4	2,622.2	3,020.2	3,145.0	3,975.0
Freestone peaches								
United States	954.0	1,106.9	1,305.6	953.5	978.8	1,138.9	856.3	1,020.0
California	177.0	241.0	287.4	251.0	278.2	309.0	328.0	290.0
Pears								
United States	682.9	683.9	749.1	698.4	717.5	637.6	728.5	499.4
California	230.2	247.4	300.4	341.8	387.8	335.6	395.0	204.0
Plums								
United States	65.1	76.4	85.2	86.8	86.1	97.7	127.5	125.3[b]
California	60.6	71.8	80.8	80.2	79.8	90.4	111.0	113.0

a/ Sweet cherries only.

b/ There are definition problems in the designation "fresh plums." Only California and Michigan differentiate plums from prunes (used fresh). Estimate based on addition of production of California fresh plums to that of Michigan, Idaho, Washington, and Oregon, which includes prunes.

Source: See Statistical Sources, *infra*, pp. 171ff.

California apple production has varied over the three decades, not necessarily in the same direction as the national trend; and since 1953, commercial production has been increasing on a five-year period annual average basis, although production fluctuates considerably on a yearly basis. Apples have not been a leading fruit crop in California, but they have been increasing in relative importance in grower returns per bearing acre as we shall note later.

Nearly all apricot production is in California; thus, national fluctuations represent California variations also. Apricots are notably subject to climate and cultural difficulties over the years. Wide shifts are well known; but a rough generalization could show apples and apricots, after a peak annual average in the 1944-1948 period (and a consequent decline thereafter), with an imaginary long-term horizontal trend through 1953. In the last decade, this generalization cannot hold since apples have shown a definite upward trend, and apricots are (very roughly) on the horizontal trend line.

Cherries in the United States figures (and this includes all cherries) showed definite upward trends until 1953. The leveling thereafter has been modified again by annual increases which are, in large part, in tart cherries. California's production, although including only sweet cherries, has shown definite leveling tendencies since the 1949-1953 period. In grapes, California leads the nation and thus dominates the trend pattern. Slow and relatively steady increases through 1948 leveled through the next decade, but an upward trend in production has been characteristic of the years since 1959.[1/]

In freestone peaches, which are also grown nationwide, the trend is somewhat similar to that of apples. The national production trends were rising slightly and steadily through World War II then again rising slowly after the lower annual average of the 1949-1953 period. The California production trends were parallel to those trends shown nationally, even though California does not dominate United States production in freestone peaches. Recent annual figures suggest divergence of California and United States trends.

In pears, which are grown in large part on the Pacific Coast, there is a very rough horizontal trend line over the 30 years, with a peak experienced in the 1944-1948 period. California experience in pear production is considerably

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1/ For further details of increases in United States production, see infra, pp. 105-120.

different from the national trend. A steady increase in tonnage continued from 1934 through 1959 (on an annual average five-year-period basis), with decreases in the 1959-1963 span. Subsequent annual fluctuations in production allow little indication of future trends.

Fresh plums, grown commercially in only two states, have shown a slight upward trend throughout the three decades, with recent years showing strong increases which may be more definitional than real.[1/] California, by far the major producer, has a parallel production pattern.

These generalizations are developed and discussed in much greater detail in the following sections of this report but, at this point, serve only to make the across-the-board comparisons for California's role in the fresh fruit industry as a major producing state.

Acreage

Summary data for acreage and yield trends present special problems, since bearing acreage for the United States is no longer reported in just that form. Census of Agriculture figures quote total trees or vines, making no reference to acreage (Table 10). Changes in planting procedures may make acreage data noncomparative; currently, many more trees per acre are planted for almost every fruit crop (and possibly fewer grape vines) due to technological changes in cultivation, harvesting, and acclimatization to commercial needs. However, California continues to prepare acreage estimates for each crop, and these trends are shown in full in Table 11, together with United States figures quoted as a comparison for the two 5-year periods ending in 1943.

Based on a cumulative table published by the U. S. Crop Reporting Board (Table 12) which covers "eight major deciduous fruits,"[2/] acreage devoted to these fruits had decreased slightly over 19 percent from 1953 to 1963 on an annual average basis with each five-year period as a unit. The decrease, however, was more than 16 percent for the years 1949-1953 and only an additional 3.4 percent for the 1959-1963 period. Acreage trends have been slightly upward since 1961; 1964 and 1965 seem to indicate the continuance of these increases.

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1/ There are definition problems in the designation "fresh plums." Only California and Michigan differentiate plums from prunes (used fresh).

2/ The definition is that of the Crop Reporting Board--commercial apples, apricots, cherries, grapes, peaches, pears, and plums and prunes.

TABLE 10

Bearing Trees or Vines of Selected Deciduous Fruits, United States
Census Years, 1940-1964

Census years[a]	Apples	Apricots	Sweet cherries	Grapes	Peaches	Pears	Plums and prunes
	thousand trees or vines of bearing acreage						
1940	58,152	5,499	2,018	273,344	47,147	12,414	21,663
1950	39,497	4,197	1,846	272,357	41,053	10,116	15,913
1954	25,044	3,314	1,520	242,247	29,013	7,973	12,830
1959	20,265	2,890	1,444	244,485	31,055	7,665	11,614
1964	21,354	3,023	1,851	266,250	26,314	7,937	13,022

a/ No data were collected in 1945.

Source: U. S. Bureau of the Census, 1964 U. S. Census of Agriculture. Volume II: Crops, Horticultural Products, and Forest Products, Chap. 4.

TABLE 11

Bearing Acreage of Selected Deciduous Fruits, United States and California
Annual Averages, 1934-1938 to 1959-1963; Annual, 1964 and 1965

	Annual average for five-year periods						1964	1965
	1934-1938	1939-1943	1943-1948	1949-1953	1954-1958	1959-1963		
	thousand bearing acres							
Apples								
United States	1,821.2	1,500.3	a/					
California	38.4	33.4	31.0	24.0	21.8	21.2	21.1	20.7
Apricots								
United States	80.2	74.5						
California	75.7	69.3	66.1	45.4	38.2	36.3	37.5	36.0
Cherries								
United States	106.1	105.8						
California	14.5	13.3	12.1	9.6	9.4	10.4	11.3	10.7
Grapes								
United States	657.8	627.1						
California	481.3	486.6	495.0	478.3	416.5	429.2	454.9	459.8
Freestone peaches								
United States	572.7	576.5						
California	41.1	37.5	39.7	32.3	32.2	35.1	33.7	31.7
Pears								
United States	212.1	181.6						
California	55.4	45.2	43.7	39.8	38.7	35.0	33.9	35.1
Plums								
United States	29.4	24.9						
California	25.7	22.0	23.5	23.3	21.6	22.9	25.5	25.4

a/ Blanks indicate no data available.

Source: See Statistical Sources, infra, pp. 171ff.

TABLE 12

United States Bearing Acreage and Yield of Selected Deciduous Fruits[a/]
Annual Averages, 1949-1953 to 1959-1963; Annual, 1964 and 1965

Period	Bearing acreage, eight major deciduous fruits[b/]	Percent change		Yield, seven deciduous fruits[c/]	Percent change	
		Each period	Total		Each period	Total
	thousand acres			tons		
1949-1953	2,094.2			4.3		
1954-1958	1,751.8	-16.4		5.2	+21.1	
1959-1963	1,692.7	- 3.4	-19.2	5.9	+13.4	+37.4
1964	1,707.4			6.4		
1965	1,730.8			6.6		

a/ "Selected" in this title is the term used by the U. S. Crop Reporting Board. Note that their definition does not refer to exactly the same fruits that are included in this study in using the term "selected."

b/ Commercial apples, apricots, cherries, grapes, peaches, pears, plums, and prunes.

c/ Same fruits as above, excluding cherries.

Source: U. S. Statistical Reporting Service, Crop Reporting Board, Crop Production: 1964 Annual Summary--Acreage, Yield, Production, by States, CR-PR 2-1 (64), December, 1964, 108p.

Yield figures compiled by the same office are for seven deciduous fruits, and the fruit excluded is cherries, so the data is not strictly comparable. However, for the seven fruits included, yield per bearing acre has increased by more than one-third since 1949; the period of greatest increased yield was that of greatest decreases in acreage. The years 1964 and 1965 show a continuation of the uptrend in yield, with more than 6½ tons per acre of these seven deciduous fruits estimated to be grown on every bearing acre devoted to their commercial culture in the United States.

In California, as Table 3 indicates, apples, apricots, and pears continue to show decreased bearing acreage throughout the 30-year span. Sweet cherries, peaches, plums, and grapes have actually increased the annual average bearing acreage figure for the 1959-1963 period over the preceding five years, although strong decreases from the 1934-1938 acreage figures are indicated. Freestone peaches seem not to be carrying the increases of the early 1960's into the annual figures for 1964 and 1965. Pear acreage is fluctuating according to annual figures. The other deciduous fruits noted are continuing their indicated trends over time.

Grapes are grown on much the largest California acreage of the seven fruits of this study. Apricots, pears, and freestone peaches are all grown on about an equal number of bearing acres; apples and plums on less than 25,000 bearing acres; and cherries trail at near 10,000 acres harvested each year.

Yield[1/]

The various deciduous fruits in California have had a common experience with yield trends over the three decades (Table 13). All fruits increased yield per bearing acre above the earlier years. For only sweet cherries has there been a major deviation from trend. In sweet cherries, a peak yield was shown in the annual average figures of 1949-1953 from which decreases were experienced (higher yields other than for 1934-1938 were shown, nevertheless). Apricots had a lower annual yield in the 1939-1943 period than in the five years before, but later increases have been steady. Pears showed decreased yield in the 1959-1963 period over that of the previous five years; but here too, the increased yield over the earlier years is more than 100 percent. The

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1/ Yield is used throughout as "yield per bearing acre."

TABLE 13

Yield Per Bearing Acre of Selected Deciduous Fruits, United States and California
Annual Averages, 1934-1938 to 1959-1963; Annual, 1964 and 1965

	Annual average for five-year periods						1964	1965
	1934-1938	1939-1943	1943-1948	1949-1953	1954-1958	1959-1963		
	tons per bearing acre							
Apples								
United States	1.60	1.87	a/					
California	4.91	5.29	6.40	7.70	10.06	11.06	14.1	9.6
Apricots								
United States	2.87	2.68						
California	2.85	2.59	3.56	4.13	4.38	5.31	5.6	6.2
Cherries								
United States	1.32	1.57						
California b/	1.47	1.77	2.48	3.37	2.92	2.08	2.8	2.9
Grapes								
United States	3.58	4.15						
California	4.40	4.92	5.60	5.66	6.30	6.89	6.9	8.6
Freestone peaches								
United States c/	1.67	1.93						
California	4.31	6.43	7.23	7.78	8.65	8.79	9.7	9.1
Pears								
United States	3.25	3.77						
California	4.16	5.47	6.87	8.58	10.03	9.59	11.6	5.8
Plums								
United States	2.22	3.08						
California	2.36	3.26	3.44	3.44	3.69	3.94	4.6	4.4

a/ Blanks indicate no data available.

b/ Sweet cherries only.

c/ Includes all peaches.

Source: See Statistical Sources, *infra*, pp. 171ff.

importance of the increased yield on decreasing acreage is striking throughout the 30 years. Only in the most recent five-year period have the acreage figures for California shown a noticeable upward turn.

For the United States, as shown in Table 13, it is not possible to have directly comparable comments. But for the seven fruits shown in Table 12 (excluding cherries and including all peaches and prunes as well as plums), yield for the United States as a whole has increased over one-third, with the greatest percentage of change shown in the 1954-1958 period. California's own increased yield figures are, of course, subsumed by the national yield shown; but the generalization holds, for the national trend as well as for California, that increased yield per bearing acre of deciduous fruits has continued on decreasing bearing acreage.

It is clear from the tables shown that increased yields per bearing acre have been the underlying cause of the increased production trends already noted. The interaction of various forces--tree maturity, nonbearing acreage shifts, and commercial ownership patterns--can account for some change. But the major influence is thought to be technological change, both in cultural practices and harvesting techniques. Sprays and fertilizers, irrigation and ground cover experimentation, and hormone and defoliant treatments are all used in standard cultural practice at the present time. Spacing and preconditioning of plantings, varietal differences, and mechanical aids are all harvesting considerations of present-day orchards and vineyards. Improved management, cultural research, and controlled marketing all influence yield, both at present and as future prospects are considered.

Grower Prices

The average prices received by growers tell only part of a larger story; yet, it may be of some interest to summarize the broad developments in the grower prices of deciduous fruits.

In general, it can be said that price to growers could be expected to be parallel in trend to overall business conditions. This assumption is modified somewhat as soon as it is observed specifically and in depth. It can be noted, however, that the great upward trend from the depression years through the war period was expressed in the very great increases in grower prices shown for both the United States and for California in Table 14.

TABLE 14

Grower Prices of Selected Deciduous Fruits: All Uses, United States and California[a]
Annual Averages, 1934-1938 to 1959-1963; Annual, 1964 and 1965

	Annual average for five-year periods						1964	1965
	1934-1938	1939-1943	1944-1948	1949-1953	1954-1958	1959-1963[b]		
	dollars per ton							
Apples								
United States	34.17	51.33	93.41	70.42	72.92	85.20	75.83	85.00
California	15.58	33.33	58.75	51.92	56.42	64.80	41.20	76.30
							(42.00)[c]	(76.70)
Apricots								
United States	42.90	66.58	98.62	104.52	124.80	116.70	124.00	93.30
California	42.00	63.18	93.94	100.58	122.60	115.96	118.00	81.50
							(124.00)	(92.60)
Sweet cherries								
United States	[d]	136.34	272.20	234.20	284.00	332.20	290.00	330.00
California	114.34	153.06	290.60	267.00	318.80	371.20	336.00	395.00
							(339.00)	(398.00)
Grapes								
United States	18.20	31.00	62.00	46.34	55.38	55.94	62.80	44.90
California	16.26	29.14	59.16	42.86	51.24	50.02	55.50	38.80
							(55.80)	(38.90)
Freestone peaches								
United States[e]	38.08	55.92	86.17	78.58	86.17	80.00	91.80	90.80
						/89.00/[f]	/107.20/	/95.80/
California	21.98	40.10	67.72	63.30	65.74	65.40	61.70	51.70
							(79.60)	(59.50)
Pears								
United States	30.50	53.50	94.58	67.42	75.67	86.40	92.50	132.00
California	26.38	47.06	90.28	64.54	75.14	90.02	88.10	134.00
							(102.00)	(146.00)
Plums								
United States	46.12	83.72	138.00	159.80	173.80	168.40	86.00[g]	98.50[g]
California	35.28	70.06	109.74	131.82	141.60	134.80	106.00	96.80
							(107.00)	(97.00)

(Continued on next page.)

TABLE 14--continued.

a/ United States quotations, packinghouse-door basis. California quotations, first-delivery-point basis.

b/ 1959-1963 recent revisions may reflect minor weight conversion differences as well as price revisions.

c/ California quotations in parentheses, packinghouse-door basis now quoted by California (comparable to United States prices).

d/ No quotations available.

e/ United States data are for all peaches, including California clings.

f/ United States quotations in brackets are freestone peaches for which separate estimates were not available in earlier years.

g/ Price not strictly comparable to earlier quotations because of definitional differences.

Source: See Statistical Sources, infra, pp. 171ff.

An aside on comparable data problems is relevant here. It should be noted that on a strict basis the United States figures and California prices are not entirely comparable throughout the 30 years. Other than California, United States price to growers did mean price at the packinghouse door. In California, it did mean first delivery point, which was not necessarily the same thing and often did not include quite all the same costs. Therefore, all other things being equal, United States price might have been assumed to be slightly higher than California's throughout. California is now using the same definition as the rest of the country; therefore, these new quotations are included in parentheses for 1964 and 1965 in Table 14 to show the differences of those years between the two definitions for California. The five-year annual average prices for California, however, are on the traditional first-delivery-point basis.

In surveying the long-term trends, it should also be remembered that California prices to growers are included in the United States quotations; and in the special case of apricots, for example, they do indeed dominate, if not actually determine, the United States price. It would be more surprising, therefore, to find the trends--national and state--diverging than to find them the same.

Thus, for the United States and California, the strong upward trend line in price to growers for these fruits through 1948 turned down for most deciduous fruits thereafter, only to assume some upward direction throughout the last decade at current prices. This was not true in apricots, which continued the upward trend strongly through 1958 only to tail off in the last five-year period. In grapes, grower prices were on a flat level for the 1954 through 1963 decade, meaning lower real returns to growers as the price level continued its upward direction throughout. The increases in grower prices have not been characteristic of freestone peaches, where some decreased price to growers was true, both nationally and in California, during the 1959-1963 five-year period as illustrated by its annual average. This was also true for plums.

We have thus far summarized grower prices for all uses for the various fruits studied. Since our particular interest is in California data, Table 15 shows separate fresh and processed prices to California growers for each fruit, first-delivery point, for the periods our survey covers.

California grower prices have increased by multiples over this 30-year period, just as the general level of prices has done. While the personal disposable income showed a 486 percent change in terms of current dollars (as

TABLE 15

California Grower Prices of Selected Deciduous Fruits: Fresh and Processed[a/]
Annual Averages, 1934-1938, 1949-1953, and 1959-1963; Annual, 1964 and 1965

Selected deciduous fruits	Annual average for five-year periods						Percent change				Annual			
	1934-1938		1949-1953		1959-1963[b/]		1949-1953 to 1959-1963		1934-1938 to 1959-1963		1964		1965	
	Fresh	Processed	Fresh	Processed	Fresh	Processed	Fresh	Processed	Fresh	Processed	Fresh	Processed	Fresh	Processed
	dollars per ton										dollars per ton			
Apples	20.92	8.50	79.58	37.42	95.08	53.25	+19.5	+42.3	+354.5	+526.5	58.30	34.36	96.70	64.69
Apricots	39.90	42.27	119.60	98.33	121.04	111.69	+ 1.2	+13.6	+203.4	+164.2	163.00	112.05	112.00	87.84
Sweet cherries	114.22	114.61	315.20	223.42	453.60	298.81	+43.9	+33.7	+297.1	+160.7	412.00	256.27	455.00	321.76
Grapes	21.94	14.59	55.58	39.73	66.50	48.01	+19.6	+20.8	+203.1	+229.1	70.80	53.27	44.50	40.39
Freestone peaches	25.14	20.61	74.96	53.43	60.42	47.50	-19.4	-11.1	+140.3	+130.5	71.90	56.01	66.00	43.17
Pears	28.52	23.92	71.36	61.46	95.60	83.70	+34.0	+36.2	+235.2	+249.9	87.80	88.19	137.00	147.77
Plums	35.62	27.00	134.22	45.30	141.80	20.24	+ 5.6	-55.3	+298.1	- 25.0	111.00	24.93	101.00	23.02

a/ Price paid to growers, first delivery point.

b/ Recent minor revisions in seasonal prices for 1959-1963 have not been included. Their inclusion would not change five-year average by as much as 1 percent.

Source: See Statistical Sources, infra, pp. 171ff.

noted earlier) between the annual average recorded for 1934-1938 and 1959-1963, average price to grower for the seven fruits as a group (on a weighted-average basis, all sales) increased over 202 percent. But the degrees of increase have varied among the various fruits; for some, the fresh-use price increased relatively more than the processed-use price; while for others, the reverse is true. In only one case--that of plums for processing--is there a decrease in price to growers since the prewar years (Table 15).

The percentage change in every case was greater in the first two decades than in the last decade.[1/] In one case--that of freestone peaches--the price to growers has reversed direction; that is, in the period 1949-1953 to 1959-1963, freestone peaches showed a decrease in growers' price of nearly 20 percent on the fresh market and over 10 percent in the processed market. Other fresh fruits have not had this experience, although fresh apricots showed only a 1-percent change in an upward direction over this period; but processing price for apricots increased by nearly 14 percent. Plums, as indicated earlier, also suffered severe declines in price for California growers for the processing channels during this period; but there had been an overall decline for the entire 30-year span. Still, the growers' price for fresh plums showed a small increase (5.6 percent) during the recent decade's experience; and fresh price was nearly three times that of the middle 1930's.[2/]

Measured simply in percentage change over the three decades' experience, it cannot be said that processed price has increased less than fresh price by specific fruits. Apples and grapes have shown considerably greater and pears slightly greater overall increases in price to growers for processing than for fresh fruit in each case measured in percentage terms. In the period 1949-1953 to 1959-1963, sweet cherries and plums showed increases in growers' price that are greater for the fresh product than that for the processed; but in every other separate fruit under consideration, with varying degree, the percentage

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1/ The different time span must be remembered of course.

2/ There are some special statistical problems associated with estimated price-to-grower quotations for both fresh apricots and fresh plums. There are indications that season average price (all uses) and season average price to grower (fresh) include several different levels of preparation. In some recent years, packed rather than bulk fruit has been included in the quotations, thus artificially raising price-to-grower quotations.

change in processed price increases has been greater than that recorded for the fresh price.

If we consider the selected fruits of California and survey the price change to grower on a weighted-average basis over the 30 years of our survey (on a five-year, annual average basis), the observation of price trends for the group of fruits is shown in Table 16. For the entire 30-year period, weighted-average price for all sales which showed a 202.5 percent increase had only 15.1 percent increase in the 1949-1953 to 1959-1963 period. If price to grower for fresh sales alone is considered for these fruits, the increase over the full 30 years is 223.7 percent, of which 188.1 percent took place during the first two decades. Only a 12.4 percent rise in prices to growers for fresh sales has been indicated in the 1949-1953 to 1959-1963 period, but a 19 percent increase in price to grower for processed sales is indicated during the same period. Processed price to growers more than tripled over the 30-year span, almost as great an increase as shown in fresh price for the same fruits. To be sure, the price for processing in the earlier years was lower (on a weighted-average basis) than price to grower for fresh sales. The weighted-average price to growers for all sales of these fruits for the period 1949-1953 to 1959-1963 was an upward change of 15 percent.

The inclusion of grapes in our selection of fruits might be considered a biasing factor since the largest utilization of grapes is in raisins and wine, and the price influences are, therefore, of a different variety. Therefore, data are also presented for the six deciduous fruits, omitting grapes, in the lower half of Table 16. There is a substantial change in the magnitude of our indicated changes, though no change in direction once grapes are excluded. The percentage increase in price to growers for fresh sales for the six fruits is now greater over the 30 years; price to growers for processed sales, without grapes, shows an increase of 166.7 percent rather than 205.5 percent. But in the third more recent decade the fresh price increase is very little changed by the omission of grapes. Processed price to growers has risen by 12.7 percent rather than 8.7 percent on a weighted-average basis without grapes. Price to growers for total sales, without grapes, is up by 8.4 percent rather than 15 percent in this latter decade of our survey--an important difference--although the omission of grapes in the selection of fruits does not make that much difference over the 30 years taken as a whole.

TABLE 16

Changes in California Weighted-Average Price for Selected Deciduous Fruits
Annual Averages, 1934-1938 to 1959-1963

Period	Fresh	Percent change: Each period	Percent change: Total 30-year period	Processed	Percent change: Each period	Percent change: Total 30-year period	Total sales	Percent change: Each period	Percent change: Total 30-year period
	dollars per ton			dollars per ton			dollars per ton		
1934-1938	25.42			18.14			20.21		
1939-1943	50.26			29.94			35.33		
1944-1948	88.85			60.01			67.10		
1949-1953	73.23	188.1		46.56	156.7		53.10	162.7	
1954-1958	84.18			54.94			61.90		
1959-1963	82.29	12.4	223.7	55.42	19.0	205.5	61.13	15.1	202.5
	Not including grapes[a]								
1934-1938	30.17			29.09			29.53		
1939-1943	57.82			44.37			49.85		
1944-1948	100.21			77.65			86.56		
1949-1953	97.16	222.0		68.85	136.7		79.33	168.6	
1954-1958	105.69			77.09			86.52		
1959-1963	105.03	8.1	248.1	77.59	12.7	166.7	85.99	8.4	191.2

a/ Deciduous fruits not including grapes (whose price is strongly affected by use as raisins) give a more homogeneous sample of this finding.

Source: See Statistical Sources, *infra*, pp. 171ff.

Either there is some discrepancy in the way these prices are recorded that does not represent the real situation, or the generalization made in an earlier study must be modified. At that time, it was possible to say that "relative lowering in the price of deciduous processed fruits probably enters into the explanation of the increase in the per capita disappearance of processed deciduous fruits."[1/] It would be necessary now to say that the more relevant factors accounting for increases in processed fruit consumption, which is indeed still greater than fresh fruit consumption, are the differences in relative prices at wholesale and retail level between fresh and processed price to consumers--differences which favor the processed fruit.

Gross Returns in California for Selected Deciduous Fruits

One additional index of the relative gross returns from deciduous fruits is a measure which reflects the combined influence of price and yield--gross returns per bearing acre to growers. Table 17 shows this measure for California growers for the three decades for each of the seven fruits. In line with the cyclical movement of prices in general, already discussed, California grower returns (which are derived by a very simple formula of multiplying grower price by yield per bearing acre with no refinements) show general increases. Two exceptions are noted in the sixth and last five-year period: neither sweet cherries nor freestone peaches showed gross returns per bearing acre as high as had been true in 1954-1958 on an annual average. All other fruits demonstrated uptrends throughout, though of differing degree. Apples trended up strongly in the earlier years but much more gradually after the level of 1944-1953. Apricots, with one peaking period of increase toward the end of World War II, have shown gradually increased returns per bearing acre over the years which have not matched increases in the general price level. Grapes have fluctuated strangely, with a low rate of return in the 1949-1953 period but with some steady, slow gains since then. Pears also had decreased grower returns recorded for the 1949-1953 period after an extremely strong upward trend through 1948. In the last decade, grower returns have been increasing but at a somewhat less rapid rate. Plums, whose price pattern has been unique among the seven California deciduous fruits described, have demonstrated a steadily increasing return to growers per bearing acre, which accounts for their continued production despite the price-per-ton fluctuations.

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1/ Hoos and Fuller, op. cit., p. 19.

TABLE 17

Estimated Gross California Grower Returns per Bearing Acre for Selected Deciduous Fruits
Annual Averages, 1934-1938 to 1959-1963; Annual, 1964 and 1965

Selected deciduous fruits	Annual average for five-year periods						1964	1965
	1934-1938	1939-1943	1944-1948	1949-1953	1954-1958	1959-1963		
	dollars per ton							
Apples	82.56	196.50	395.00	395.80	559.00	716.20	580.10	734.00
Apricots	116.74	136.98	351.80	421.40	515.60	578.60	654.90	507.74
Sweet cherries	157.20	233.80	747.00	844.80	886.00	765.60	937.40	1,161.30
Grapes	68.80	142.44	329.20	241.20	322.60	349.40	383.50	335.23
Freestone peaches	100.44	254.20	525.40	490.80	569.20	459.80	599.72	472.54
Pears	101.56	257.60	603.40	543.40	745.20	799.40	1,025.48	778.54
Plums	81.16	206.64	361.80	412.60	496.00	511.60	482.30	430.76

Source: See Statistical Sources, infra, pp. 171ff.

It should be noted without need of emphasis that grower gross returns per bearing acre are not net returns or profits received by growers. Fixed and operating expenses of growers are not recorded; thus, the period comparison sketched here is useful only as an indicator of combined yield-grower price influence rather than being suggestive of grower net earnings.

Fresh Sales

Since our attention is particularly directed toward the fresh fruit market, the observation of trends in fresh sales is of special interest (Table 18). For national fresh sales, apples lead the list in tonnage; but for fresh sales of a California crop, grapes are first in volume of tonnage sold. Fresh sales of United States apples decreased in tonnage from the annual average of the 1934-1938 period through the World War II averages. Since then fresh sales have remained, on the average, relatively stable at close to 1.7 million tons annually. In freestone peaches, increasing national fresh sales continued from 1934 through World War II. A decrease in the 1949-1953 average was followed by a decade of strongly increased fresh sales. The annual figures for 1964 and 1965 are at much lower levels, however. In other deciduous fruits, generalizations are difficult to make for national fresh sales trends. Apricots have indicated long-run decreasing fresh sales since the mid-1940's for the nation as a whole. Sweet cherries have fluctuated over time, while grape tonnage going to fresh sales remained relatively stable for the past 20 years. Fresh sales of pears seem to be on a definite downtrend since World War II, both nationally and in California. Plums as a product are defined differently in different locations, so overall generalizations are not very meaningful over time.

The pattern of fresh sales is somewhat different for California in various specific five-year time periods than that for the United States; but, again, no generalizations can be made for all fruits. In apples and freestone peaches, where California does not dominate the production for the nation as a whole, the trend direction for fresh sales differs for the United States and for California in the 1959-1963 five-year period. That is, fresh sales of apples for the United States as a whole decreased, while those of California apples increased; freestone peaches increased in fresh sales tonnage for the United States as a whole, and those of California increased between the five-year period of 1954-1958 and that of 1959-1963. The direction of change for the fresh sales of the

TABLE 18

Fresh Sales of Selected Deciduous Fruits, United States and California
Annual Averages, 1934-1938 to 1959-1963; Annual, 1964 and 1965

	Annual average for five-year periods						1964	1965
	1934-1938	1939-1943	1944-1948	1949-1953	1954-1958	1959-1963		
	fresh weight, thousand tons							
Apples								
United States	1,957.6	1,812.6	1,645.6	1,704.2	1,734.6	1,682.9	1,764.2	1,668.0
California	96.3	84.9	88.2	64.6	61.7	63.2	87.4	76.5
Apricots								
United States	25.1	30.8	45.9	31.2	23.7	19.3	19.3	14.4
California	16.2	16.8	25.2	20.2	11.3	10.8	12.5	13.6
Sweet cherries								
United States	a/	34.9	37.3	39.6	33.7	30.7	45.8	28.4
California	10.7	12.0	13.6	14.7	11.6	9.2	15.8	17.6
Grapes								
United States	623.1	575.5	545.9	554.1	541.5	538.4	545.9	593.5
California	492.7	505.2	515.8	531.0	518.3	575.7	521.5	565.6
Freestone peaches								
United States	665.0	775.0	935.4	675.9	697.5	791.7	551.4	653.5
California	55.8	93.7	122.7	112.2	116.7	113.8	116.9	108.4
Pears								
United States	395.8	352.3	387.0	294.3	290.1	248.8	252.4	198.1
California	123.3	99.9	113.3	106.6	101.8	78.5	75.2	31.6
Plums								
United States	62.1	68.4	78.2	78.0	76.9	116.5 b/	140.4 b/	137.2 b/
California	58.5	64.4	74.7	73.4	73.7	82.3	105.0	102.4

a/ No data available.

b/ By definition this total for United States now includes Michigan, Idaho, Washington, and Oregon where prunes are a large percentage of crop plus California where prunes are not included.

Source: See Statistical Sources, infra, pp. 171ff.

other fruits of this study remained the same nationally and for California over the three decades covered.

Fresh Sales as a Percentage of Total Sales

If we now review the relationship of fresh fruit sales to that of total sales, we can make the rough generalization that fresh sales have been decreasing in relation to total sales the entire 30 years of our survey for the United States as a whole (Table 19). Apricots offer a minor exception since fresh sales were an increasing percentage of total apricot sales until after World War II. The relationship between fresh and total sales for freestone peaches held steady from 1939 through the war period. Fresh plums also increased in percentage of fresh sales of the total crop sales after World War II. But the major trend has been a steady decrease in the ratio of fresh sales of fresh fruits to sales for all uses despite exception for individual years for individual crops.

In California figures, the downward trend is also apparent but not as general as it is on a national basis. Apples and pears have trended down strongly in the relationship of fresh to total sales over the 30 years of the survey, but in sweet cherries the relationship of fresh to total sales has fluctuated, and in grapes it has been relatively steady. In freestone peaches, California fresh sales rose as a percentage of total sales from the 1930's through the 1949-1953 period. Since then, fresh sales have decreased somewhat as a percent of total sales but not to earlier levels. In apricots and plums, California, of course, dominates the national pattern as we have already noted. Only in plums does California have a major proportion of its crop go to the fresh market.[1/] In sweet cherries, California fresh sales come close to sharing the market evenly with processed sales. But in the two deciduous fruits--apples and freestone peaches--that nationally send more than 50 percent of all sales into the fresh market, California does not match the national percentage sold fresh.

Per Capita Disappearance

With this background, particularly the developments in fresh sales, we now turn to the trends in per capita consumption (or, technically, disappearance)

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1/ This is largely a matter of definition; California prune plums are identified as a separate crop and a differentiated "fruit industry."

TABLE 19

Fresh Sales as a Percent of Total Sales of Selected Deciduous Fruits, United States and California
Annual Averages, 1934-1938 to 1959-1963; Annual, 1964 and 1965

	Annual average for five-year periods						1964	1965
	1934-1938	1939-1943	1944-1948	1949-1953	1954-1958	1959-1963		
	percent							
Apples								
United States	75.8	72.0	71.8	69.2	66 3	61.5	56.2	56.0
California	52.5	50.5	46.4	35.5	29.0	27.1	29.6	36.6
Apricots								
United States	11.1	15.8	17.9	15.8	12.9	9.7	8.9	6.9
California	7.5	9.6	11.0	10.9	6.8	5.8	6.1	6.5
Sweet cherries								
United States	a/	50.2	43.8	44.1	38.1	31.4	39.4	33.3
California	53.2	55.8	45.6	45.9	42.6	43.6	51.0	57.3
Grapes								
United States	27.1	22.4	20.1	19.2	19.0	16.3	15.7	13.7
California	23.3	21.1	18.6	19.6	19.8	17.1	16.6	14.2
Freestone peaches								
United States	82.2	80.9	80.5	78.8	75.0	72.9	66.9	70.7
California	29.8	39.2	43.3	45.1	42.2	37.1	35.8	37.5
Pears								
United States	67.5	58.6	56.8	45.9	42.0	39.9	35.4	40.4
California	55.8	41.3	38.2	31.8	26.5	23.4	19.1	15.5
Plums								
United States	96.7	96.2	93.2	95.8	92.9	75.6 b/	78.4 b/	76.7 b/
California	97.0	96.3	93.5	97.3	95.8	94.1	95.6	95.0

a/ No data available.

b/ By definition this total for United States now includes Michigan, Idaho, Washington, and Oregon where prunes are a large percentage of crop plus California where prunes are not included.

Source: See Statistical Sources, *infra*, pp. 171ff.

of these selected deciduous fruits. In a general way, per capita disappearance figures are symptoms of the basic underlying developments discussed in this report. It is, therefore, reasonable to conclude this summary with an overview of consumption trends since they reflect the interaction of production, supplies marketed, demand, price, income, population, and consumer preference and taste.

In summary form, we have already discussed fruit consumption figures in general and tabulated them (Table 6) in a combined form for the deciduous fruits of this study. Here, Table 20 shows such data arranged by individual fruits in detail. (Each fruit is discussed separately in a later section of the report.) It is not a totally satisfactory summary because we have only two fruits of our selection--apples and pears--for which completely comparable total per capita consumption figures have been developed. These are quoted for these two cases. For the other individual fruits, total figures are not included; but each separate type of consumption is cited in summary for the time period available. There are total figures available (quoted in Table 20) for plums and prunes (considered together), but this is not strictly the same fruit as that of our study.

As in our earlier summary of trends for all deciduous fruits, it is clear that total per capita consumption for apples and pears is declining over the 30 years of our survey. From Table 7 we found that total disappearance for all fruits (other than citrus) on a calendar-year basis, fresh-weight equivalent, decreased 14.8 percent from 1934-1938 to 1959-1963 on an annual average five-year-period basis. This decrease has continued into the more recent single years. In pears, we find from Table 20 a much larger proportionate decrease in total per capita disappearance over the 30 years, although consumption rose in the decade between 1939 and 1949 before starting its downward course. In apples the percapita consumption decrease has been close to 20 percent over the 30-year period.

For the other selected fruits, we can only comment with any comparability about consumption by types of utilization. Plums and fresh prunes have had changes in product definition in recent years, but in an earlier study where data were compiled on a single definition, we do have a total disappearance figure which also shows a strong downward trend from the mid-1930's.[1/] All the

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1/ Special tables on a fresh-equivalent basis for all consumption appear in U. S. Economic Research Service, Fruit Situation, TFS-155, June, 1965.

TABLE 20

United States Per Capita Consumption of Selected Deciduous Fruits[a]
Annual Averages, 1934-1938 to 1959-1963; Annual, 1964 and 1965

Deciduous fruits	Annual average for five-year periods						1964	1965
	1934-1938	1939-1943	1944-1948	1949-1953	1954-1958	1959-1963		
	pounds							
Apples[b]								
Total[c]	32.3	32.5	28.9	28.9	26.8	25.8	26.6	25.6
Fresh[c]	29.5	29.0	24.6	23.1	20.1	17.9	17.8	16.3
Canned[d]	1.1	1.5	1.4	2.4	3.0	3.4	3.7	3.8
Dried[e]	.1	.1	.2	.1	.1	.1	.09	.09
Juice[f]	g	.23	.34	.52	.67	1.01	1.49	1.53
Apricots								
Fresh[c]	.4	.5	.7	.4	.3	.2	.2	.1
Canned[d]	.9	.8	1.4	1.0	1.0	1.04	1.0	1.1
Dried[e]	.2	.1	.2	.14	.09	.06	.06	.06
All cherries								
Fresh[c]	1.1	1.1	1.0	.8	.6	.3	.4	.4
Canned[d]	1.0	1.1	1.1	1.5	1.3	1.2	1.3	1.1
Grapes								
Fresh[c]	6.8	6.1	5.7	5.5	4.6	3.7	3.5	3.7
Raisins and currants[d]	2.2	2.4	2.2	1.76	1.64	1.51	1.45	1.54
Juice[h]	.33	.63	.52	.63	.75	.71	.65	.74
Freestone peaches								
Fresh[c]	12.5	13.8	15.6	9.9	8.78	8.79	5.97	6.94
Canned[d]	.3	.9	1.1	1.3	1.8	2.3	1.91	.98
Dried[e]	.3	.2	.2	.11	.08	.06	.05	.04
Pears[b]								
Total[c]	8.0	8.6	8.4	7.0	6.6	6.1		
Fresh[c]	6.4	6.4	6.3	4.4	3.6	2.6	2.4	1.8
Canned[d]	1.1	1.4	1.1	1.5	1.8	2.0	1.6	1.9
Dried[e]				.01	.01	i	i	i

(Continued on next page.)

TABLE 20--continued.

Deciduous fruits	Annual average for five-year periods						1964	1965
	1934-1938	1939-1943	1944-1948	1949-1953	1954-1958	1959-1963		
	pounds							
Plum and fresh prunes[b]								
Total[c]	8.0	7.7	7.2	5.6	5.1	4.3		
Fresh[c]	2.7	2.4	2.4	2.1	1.6	1.4	1.6	1.4
Canned[d]	.6	.6	.6	.4	.5	.3	.3	.3
Dried prunes[i]	1.9	1.8	1.4	.93	.81	.63	.66	.59
Fruit nectar[f]	.11	.22	.22	.69	1.04	.70[k]	.28[k]	.38[k]

a/ Alaska and Hawaii included in 1960 and after.

b/ Special tables on a fresh-equivalent basis for all consumption appear in U. S. Economic Research Service, Fruit Situation, TFS-152, August, 1964 (apples); TFS-147, June, 1963 (pears); and TFS-55, June, 1965 (plums and prunes).

c/ Fresh equivalent or farm weight, calendar year.

d/ Product weight--pack year, 1934-1942, and calendar year, 1943 to date. Full category is "canned and chilled." For apples, includes applesauce, and for peaches, estimates for freestone peaches alone, based on amount going to canning sales on the formula, 1 pound fresh = 1 pound product weight.

e/ Product weight, pack year--midyear of year indicated.

f/ Product weight, calendar year (excluding frozen).

g/ Blanks indicate no data recorded.

h/ Calendar year until 1948; after that, pack-year basis beginning November before year indicated.

i/ Blanks indicate less than .005.

j/ Excluding juice.

k/ Revised definition.

Source: See Statistical Sources, infra, pp. 171ff.

selected deciduous fruits show strong decreases in fresh consumption over the three decades. Freestone peaches and apricots deviate only in their increased per capita fresh consumption through World War II before decreasing as the others have done.

Canned consumption, however, has followed a somewhat different pattern. Per capita consumption of canned apple products, canned freestone peaches, and canned pears have shown a distinct upward trend since the middle 1930's. Canned apricots have held steady for the past 15 years after a small increase. Canned plums have been decreasing and canned cherries fluctuating in per capita disappearance over the years, while canned grape figures are not readily available. Since the latter are used in canned fruit cocktail, however, it can be assumed that they have been slightly increasing in per capita consumption over time in a manner similar to cherries.[1/]

The figures for per capita consumption for other utilizations are included in Table 20 for comparison. As each fruit is considered in turn, trends in per capita consumption will be discussed. From available data it seems clear that long-term declines in fresh fruit consumption are also being accompanied at present indications by not quite so rapid declines in total per capita consumption of these deciduous fruits. Technological improvements, convenience aspects, and marketing developments which have been concentrated in large part in the processing of these fruits have not yet succeeded in reversing the long-term downward trends in total consumption of the fruits covered in this report.

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1/ Canned fruit cocktail has increased 48 percent over the past decade. Since it is a large export commodity, domestic movement has fluctuated rather than steadily increasing, but the 1965-66 commercial domestic movement represents a 30 percent increase over a decade earlier. See Sidney Hoos and George M. Kuznets, Pacific Coast Canned Fruits, F.O.B. Price Relationships, 1966-67, University of California, Giannini Foundation Research Report No. 293 (Berkeley, 1967), 37p.

SELECTED DECIDUOUS FRUITS OF CALIFORNIA

The initial sections of this report have reviewed the major California deciduous fruits in comparative terms. Important economic aspects for the fresh fruit industry--production, acreage, yield, total fresh and processed sales, and per capita consumption trends--have all been considered as they applied to the combined industry and as they directed attention to comparisons among fruits. Similarities and differences were highlighted.

This section of the report reconsiders these data already presented in summary. Now, however, the related trends will be examined for each fruit separately. Production, acreage, yield, and utilization will be presented for each fruit as a background for the presentation of the per capita disappearance of the specific fruit and some coverage of price trends. Although consumption figures can be quoted only for the United States as a whole, data will be presented whenever possible in comparative terms for the United States as a whole and California in particular, and emphasis will be placed on California experience in the fresh fruit industry.

United States fruit exports will be included in a brief section for each fruit since it is estimated that about two-thirds of the United States exports of all fruits, nuts, and preparations (the overall designation in trade terms) were produced in California in recent years. Although official figures are still not available on which to base annual quotations for California exports on a separate basis, it is generally conceded that more than two-thirds of the United States fresh fruit exports come from California.[1/]

This section, therefore, becomes specific for each fruit in a detailed fashion; there is an advantage gained in the presentation of an integrated account of significant and related developments as they pertain to a particular fruit. For those who are concerned with each individual fruit, this section will provide economic data covering production and marketing of that single deciduous fruit.

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1/ A new compilation taken from various official sources, supplemented by trade estimates of various sorts, was being issued by the California Department of Agriculture. See California Crop and Livestock Reporting Service, Exports of Agricultural Commodities Produced in California (Sacramento, annual issues, 1962 through 1966; now discontinued).

Apples[1/]

Production

Although fluctuating considerably from year to year, apple production has been, on the average, relatively more stable over the three decades under consideration than other deciduous fruits (Table 21). The lowest year of total United States production (1945) came within the lowest five-year average period, which seemed, however, to mark the end of declining production for the nation as a whole. A slightly rising trend in average apple production has persisted since the late 1940's, and annual United States production each year but one since 1958 has been slightly above three million tons per year. That one year (1960) was low enough to bring the 1959-1963 five-year, annual average below three million tons. The level of production, therefore, now exceeds that of the 1930's but not that of the 1920's.

There are 35 states which produce apples in sufficient volume to be classified as "commercial" apple states by the U. S. Crop Reporting Board. Five of these states--New York, Virginia, Michigan, Washington, and California--produced 62 percent of the total crop in 1964. Washington has the largest annual production of the five states. In 1964 New York was second to Washington, and Michigan produced about three-fourths as many apples as New York. California's production was greater than that of Virginia and about half that of New York.[2/]

California apple production does not parallel the national picture. It has generally varied around a level trend, but the past decade has seen considerable increase in the average production with the increases showing decidedly higher tonnage than the 1920's. The low point of California production was in the early World War II years, but the annual fluctuations in apple production have been rather more striking in the more recent years of increased average production.

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1/ For general presentation of material on the apple industry, see B. Pubols' articles in U. S. Economic Research Service, Fruit Situation, quarterly issues; particularly those of August, 1964, and January, 1966.

2/ Stephen Harsh, Trends for the Apple Industry in the United States: Leading Apple-Producing States, New York State, Cornell Agricultural Experiment Station, A. E. Ext. 392 (Ithaca, New York, 1965), p. 13.

TABLE 21

Apples: Production, United States and California
Annual Averages, 1934-1938 to 1959-1963; Annual, 1964 and 1965

Period	Production	
	United States	California
	thousand tons	
1934-1938	2,895.9	188.4
1939-1943	2,817.2	176.7
1944-1948	2,443.6	198.4
1949-1953	2,686.8	184.5
1954-1958	2,717.8	215.6
1959-1963	2,808.5	234.9
1964	3,159.7	297.5
1965	3,265.0	211.2

Source: See Statistical Sources, infra, pp. 171ff.

Bearing Acreage

Acreage and yield are determinants of production; they are considered in turn. Unfortunately, complete data for national bearing acreage are no longer available, so reliance must be confined to state data and inference from rough relationship to total production. Official bearing acreage data were available from the 1920's through 1946; and during that time, a steady decrease for the United States as a whole was observed. Based on California experience and on total United States production data, it can be inferred that United States bearing acreage is very probably still declining somewhat.

Commercial apple production is the subject of the present survey; therefore, it is commercial bearing acreage that is recorded in Table 22. In earlier studies, distinctions had to be made; but all official data quoted since 1934 are on a commercial basis and, therefore, production, acreage, and yield figures in this report refer to commercial apples only.

Although nationwide details are not available, tree surveys made since 1960 in 10 apple states (not including California) lead experts to suggest that "plantings generally have been heavier than considered necessary to maintain bearing trees at their present level. . . . Forty percent of the trees in orchards have been planted during the past 10 years. . . . The bearing surface of newer trees will continue to expand for a number of years after the trees reach bearing age, thus adding to their productive capacity."[1/] In addition, it is indicative of future increases in production that dwarf and semidwarf trees make up a significant part of the new plantings and that these trees start bearing earlier and are believed to have greater per-acre production potentials than standard types. Recent fruit tree censuses also provide some clues to the variety of trees being planted. Growers throughout the United States have been emphasizing the Delicious, particularly the Red Delicious, in recent plantings.[2/]

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1/ Earl L. Park, "Recent Trends in Apple Tree Numbers," U. S. Economic Research Service, Fruit Situation, TFS-154, January, 1965, pp. 17-19.

See also B. A. Dominick, Jr., "Natural Apple Production Trends," Processing in Expanding Apple Crop, Proceedings Report, National Apple Industry Utilization Conference, University of Maryland (Baltimore, 1966), p. 2.

2/ See Earl R. Franklin and Wallace A. Rehberg, U. S. Apple Production Trends, Washington Agricultural Experiment Station, Stations Circular 444 (Pullman, 1965), 15p.

TABLE 22

Apples: Bearing Acreage, United States and California
Annual Averages, 1934-1938 to 1959-1963; Annual, 1964 and 1965

Period	Bearing acreage	
	United States	California
	thousand acres	
1934-1938	1,821.2	38.4
1939-1943	1,500.3	33.4
1944-1948	a/	31.0
1949-1953		24.0
1954-1958		21.8
1959-1963		21.2
1964		21.1
1965		20.7

a/ Blanks indicate no data available.

Source: See Statistical Sources, *infra*, pp. 171ff.

The most dramatic change in apple production in the nation and in the West has been this increase in Delicious planting and production. These are traditionally fresh market varieties. The increasing varieties account for two-thirds of all current production, and the two outstanding varieties (on the increase in all regions) are Delicious and Golden Delicious.[1/]

California does have data available on bearing acreage for all deciduous fruits; thus, we can observe the specific decreases in this state, although those in the nation as a whole must be inferred. The trend in California, although steadily downward in the decade before 1960, has recently leveled off to rather slight decreases in the last five-year period. There was a two-year period of slight increase in bearing acreage in 1960 and 1961. This does not, of course, overcome the fact that present acreage producing apples in California is less than one-half of that bearing apples in the 1920's. Although varieties differ and dwarf and semidwarf trees may bear earlier, apple trees in general are considered to be ready to bear fully in their fifth year.

Nonbearing Acreage--California

As might be suggested by bearing acreage figures for apples, nonbearing acreage in California had been relatively steady--slightly under three thousand acres annually recorded--from 1934 to 1954. Since 1954, however, average annual figures, calculated by five-year intervals, have shown an upward trend in California nonbearing acreage with small increases in the 1954-1958 period and stronger increases in the last five years (Table 23).

If the levels of pullout or abandoned acreage were known, it would be possible to calculate net increases in possible total acreage and to determine whether observed increases in nonbearing acreage would translate directly to bearing acreage and thus produce ever greater increases in the next five-year period. Since most of the nonbearing acreage is in the central coastal counties of California (2,300 acres in Santa Cruz County), it is reasonable to assume that further urbanization of that area, now definitely underway, will interrupt any steady flow of nonbearing acreage into the bearing stage.

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1/ See American Can Company, Profile and Prospects in Apple Products, 1967-1975 (New York, 1967), p. 17. This is an interesting general study, more inclusive in scope than its title might indicate.

TABLE 23

Apples: California Nonbearing Acreage
Annual Averages, 1934-1938 to 1959-1963
Annual, 1964 and 1965

Period	Nonbearing acreage
	thousand acres
1934-1938	2.9
1939-1943	2.4
1944-1948	3.0
1949-1953	2.9
1954-1958	3.1
1959-1963	4.4
1964	4.3
1965	4.7

Source: See Statistical Sources, <u>infra</u>, pp. 171ff.

Yield

Nationally, yield figures are not available for the recent years since acreage data are no longer collected for the United States as a whole. California figures are complete, however, and are given here together with the first two 5-year periods for the United States (Table 24). In available earlier years, California yield had shown consistently higher averages than the nation as a whole. In addition, California's yield per bearing acre had shown a persistent, sharp, and clear upward trend not recorded throughout the country. California yields in apple production have continued this strong upward trend throughout the past 30 years when considered on an average annual basis calculated by 5-year intervals. Annual yield for California, of course, continued to vary considerably. Relatively stable average production seems to be the result of a rising yield trend interacting with a declining bearing acreage trend. Recent indications (excluding yearly fluctuations) point to increasing production resulting from strongly rising yield trends coupled with acreage that is decreasing but at a slower rate. The possible influence of shifting varieties is a further element of interest which should be noted although not amplified in this study.

Sales--Total, Fresh, and Processed

The usual channels for commercial sale of apples include both fresh and processed outlets. Processed products are mainly canned apples, applesauce, and apple juices. The latter includes cider and fresh apple juice of several different types. Apple juice, itself, is now reaching consumers in various combinations and concentrations. An overall picture of the various utilizations in five-year intervals is shown in Table 25.

Our sales data are complete for the nation as well as for California and thus offer trend comparisons. (All tonnage figures have been quoted on a fresh-weight basis.) Total apple sales for the United States have been rising steadily since World War II and have been above prewar levels in the last decade. Although California's total sales were also higher in the last 10 years than in the prewar period, the rising average trend did not commence until the mid-1950's. Fresh sales for the United States as a whole have shown more stability than any other series quoted thus far. A steady downward trend to the wartime lows has been followed by a steady small upward trend since then, calculated on a five-year annual average basis.

TABLE 24

Apples: Yield, United States and California
Annual Averages, 1934-1938 to 1959-1963; Annual, 1964 and 1965

Period	Yield	
	United States	California
	tons per bearing acre	
1934-1938	1.60	4.91
1939-1943	1.87	5.29
1944-1948	a/	6.40
1949-1953		7.70
1954-1958		10.00
1959-1963		11.06
1964		14.10
1965		9.60

a/ Blanks indicate no data available.

Source: See Statistical Sources, infra, pp. 171ff.

TABLE 25

Apples: Total, Fresh, and Processed Sales, United States and California
Annual Averages, 1934-1938 to 1959-1963; Annual, 1964 and 1965

Period	United States			California		
	Total sales	Fresh sales	Processed sales	Total sales	Fresh sales	Processed sales
	thousand tons, fresh-weight basis					
1934-1938	2,582.3	1,957.5	624.9	183.4	96.3	87.2
1939-1943	2,518.5	1,812.6	705.9	168.0	84.9	83.2
1944-1948	2,293.4	1,645.6	647.9	190.2	88.2	102.0
1949-1953	2,464.0	1,704.2	759.8	181.8	64.6	117.2
1954-1958	2,616.9	1,734.6	882.3	213.0	61.7	151.4
1959-1963	2,737.4	1,682.9	1,054.5	232.5	63.2	169.3
1964	3,099.9	1,764.2	1,335.7	295.1	87.4	207.6
1965	2,977.2	1,668.0	1,309.2	208.8	76.5	132.3

Source: See Statistical Sources, infra, pp. 171ff.

In contrast, California fresh sales have demonstrated somewhat greater fluctuations by five-year periods with definite decreases in the postwar decades, although 1964 suddenly represented a jump to wartime levels in California. Processed sales for California have shown a steady upward trend since the 1939-1943 period so that the fluctuations indicated in total sales of California apples represent changing relationships between the increase in processed apple sales and the shifting pattern of fresh apple sales of the state's production. The United States processed sales (which, of course, include California sales but are not necessarily dominated by them) have been showing a strong upward trend since the lows of the 1944-1948 five-year period; thus, increasing processed sales coupled with slower increasing fresh sales have combined to move overall total sales in the same direction.

To illustrate the comparison further, our figures show United States fresh sales accounted for approximately 75 percent of total United States sales during the 1934-1938 period. In California, in the same five-year period, 50 percent of total sales went to fresh channels. Twenty years later--that is, in 1954-1958--fresh apple sales for the United States still constituted nearly two-thirds (over 65 percent of total sales for the United States as a whole on a five-year annual average basis), while fresh sales accounted for less than 30 percent of California's total sales. In the most recent five-year interval, United States fresh sales were still over 60 percent of the total apple sales; California's, under 30 percent of all apples that California sold.

Grower Prices

In terms of broad swings, the average grower prices for California apples are correlated with national average prices. This generalization, which was developed from earlier data, still holds true upon examination of the more recent decades. There are prevailing differences, of course, as are shown in Table 26.

Grower prices for California average under those for the country at large. Even though this is, in part, a statistical difference in the definition of grower price between California figures and United States figures until the most recent two years, the disparity is broader than that.[1/] Substantially

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1/ See *supra*, pp. 30 and 33.

TABLE 26

Apples: Average Grower Prices, All Uses, United States and California
Annual Averages, 1934-1938 to 1959-1963; Annual, 1964 and 1965

Period	Grower prices	
	United States	California
	dollars per ton	
1934-1938	34.17	15.58
1939-1943	51.33	33.33
1944-1948	93.41	58.75
1949-1953	70.42	51.92
1954-1958	72.92	56.42
1959-1963	85.20	64.66
1964	75.83	41.20
1965	85.00	76.30

Source: See Statistical Sources, infra, pp. 171ff.

lower prices in California are in large part attributable to the larger percentage of the annual crop going into processed channels (a lower value use outlet). In part, it is also a matter of consumer choice which identifies California apples with certain product characteristics. The major price increases noted in both series are, of course, the result of changes in the general price level with its inflationary trend; but the sharp annual fluctuations are illustrated by the two single-year figures, 1964 and 1965, which are more striking for California's growers than for those nationwide.

Price by Utilization for California

Since the question of returns to growers for all commercially grown fruits has focused attention on varying returns by utilization, it is helpful to add a few comments to the generalizations on price trends in which specific reference is made to differentiated grower prices. It is clear that estimates made for these prices are somewhat more tentative than generalized grower price since they are influenced, in turn, by additional conversions and aggregation of various types of processing for each fruit. But in this report, we have chosen to delineate fresh and processed prices in order to emphasize the role of fresh fruit marketing. The tables are based on prices reported by the California Crop and Livestock Reporting Service over these three decades and are quoted (on an annual-average, five-year-period basis) at point of first delivery for both fresh and processed fruit. The latter, in California, did not include handling, transportation, etc., for processed quotations until the past few years when quotations have been given on both a first-delivery-point and packinghouse-door basis. The series used for the three decades of this report, however, are exclusive of these extra costs and charges.

In observing the price trends by utilization for apples in Table 27, it is immediately apparent that (1) fresh-market use brings highest price to growers; (2) processing-grower price increases have been greater in percentage terms than fresh-grower price increases in the past decade; and (3) price difference between price to growers for fresh and processed utilization in actual dollar terms has remained almost unchanged for the past 15 years. While fresh price, in actual dollars per ton, increased 9-10 percent in the two most recent five-year intervals quoted in the series, the processed price increased 18-21 percent in those same intervals. Yet the dollar difference between the fresh price and

TABLE 27

Apples: California Weighted-Average Grower Prices, Fresh and Processed Annual Averages, 1934-1938 to 1959-1963; Annual, 1964 and 1965

Period	Fresh	Processed
	dollars per ton, fresh-weight basis	
1934-1938	20.92	8.50
1939-1943	46.25	20.17
1944-1948	80.75	39.58
1949-1953	79.58	37.42
1954-1958	86.67	44.17
1959-1963[a/]	95.08	53.25
1964	58.30	34.36
1965	96.70	64.69

a/ Recent minor revisions in seasonal prices for 1959-1963 have not been included. Their inclusion would not change five-year average by as much as 1 percent.

Source: See Statistical Sources, infra, pp. 171ff.

the combined processing price remained close to $42 throughout, measured on the annual-average, five-year-period basis.

It seems clear, just from observing the price to growers in the 1934-1938 period, that processing at that time was a salvage operation. The $8.50 per ton annual average (for the five years) was only 40 percent of the price to growers in the fresh market. Yet, 30 years later, the processing price to growers for all processing (and there are additional products now available) is still only 56 percent of that received by growers in the fresh market channels.

Per Capita Disappearance--United States

When speaking of per capita consumption of deciduous fruits, it is important to remember that the trends in the data represent nationwide estimates which are influenced by very broad factors--the combined effects of consumer preferences, income, prices, and numbers of potential consumers. Thus, population and income trends are already subsumed by the per capita "consumption" (in fact, disappearance) figures summarized here for apples (Table 28).

In addition, various problems in data collection--conversion of disparate products to show consumption on a fresh-weight basis, for example, in addition to the question of the exclusion of exports in order to estimate domestic disappearance--all tend to make one careful about specificity. However,general trends shown here on the usual five-year annual average basis show that per capita apple consumption for all uses was on a level or slightly decreasing slope until the recent past when some increase has been noted but not enough to restore previous levels. Thus, the steady increases noted in processed consumption have not been sufficient to offset decreases in fresh use until the last five- or six-year period. The fresh market apple industry, therefore, has not been keeping pace with the long-term economic and population growth of the country. The noticeable shift to increased per capita consumption of processed apples has not been sufficient, until very recently, to compensate for decreases in fresh use.

In all noncitrus fruits, including apples, per capita consumption of fresh fruit has declined in the past 20 years, while consumption of processed noncitrus fruit increased considerably during this same period.

In a recent study based on a nationwide survey of homemakers' use of selected fresh fruit, it was established that the use of fresh apples in the

TABLE 28

Apples: United States Per Capita Disappearance
Annual Averages, 1934-1938 to 1959-1963; Annual, 1964 and 1965

Period	All uses	Fresh	Processed
	pounds per capita, fresh-weight equivalent		
1934-1938	32.3	29.5	2.8
1939-1943	32.5	29.0	3.5
1944-1948	28.9	24.6	4.3
1949-1953	28.9	23.1	5.8
1954-1958	26.8	20.1	6.7
1959-1963	25.8	17.9	7.8
1964	26.6	17.8	8.3
1965	25.6	16.3	a/

a/ In product weight per capita: Canned, 3.8; juice, 1.53; frozen, .45; and dried, .09.

Source: See Statistical Sources, infra, pp. 171ff.

home is almost universal, with better than 9 in 10 homemakers indicating they purchased fresh apples during the year. In selecting positive statements about various fruits, apples were cited by more homemakers than any other fruit for "good for health" (93 percent), "good for snacks and packed lunch" (91 percent), and "can be used in many ways" (86 percent).[1/] The same study, in order to get a complete picture, also obtained information on processed fruits and, in addition, compared them with purchases of fresh fruits. Of nine canned fruits,[2/] 34 percent said they purchased apples (presumably this included applesauce, although there were specific questions covering applesauce as such) as a canned fruit. In general, purchases of all canned fruit except pineapple were highest among homemakers who had bought the same fresh fruit during the past year.

It is interesting to note that in the past decade, however, the downward trend in per capita fresh disappearance of apples has shown a leveling-off tendency, thus underlining changing relationships in utilization. Increasing processed apples per capita disappearance, coupled with an almost stable per capita fresh apple consumption, will demonstrate some increases in total apple consumption per capita under present growth conditions.

Exports

In the world fruit markets, apples have been an important export commodity for many countries. Storage ability has made the fresh apple a trading possibility as many deciduous fruits are not.[3/] The United States in the past has been an exporter of some importance; but in postwar years, the dimensions of prewar export markets have never been approached. The extent to which the tonnage of fresh exports has shrunk, compared with prewar years, is shown in Table 29.

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1/ U. S. Statistical Reporting Service, Homemakers Use of and Opinions About Selected Fruits and Fruit Products, Marketing Research Report No. 765, by L. Yvonne Clayton, August, 1966, pp. 6-16. The sample (2,454 in 48 states) design, tables, and questionnaire used are fully explained, pp. 21ff.

2/ Pineapple, fruit cocktail and salad, peaches (not specified), pears, apricots, sweet cherries, sour cherries, apples, and plums (including prunes).

3/ Ben Pubols, "Controlled Atmosphere Storage of Apples," Fruit Situation, U. S. Economic Research Service, TFS-158, January, 1966, pp. 18 and 19.

TABLE 29

Apples: United States Fresh Exports
Annual Averages, 1934-1938 to 1959-1963; Annual, 1964 and 1965

Period	Fresh exports	Fresh export as percent of total fresh sales
	thousand tons	percent
1934-1938	226.3	11.6
1939-1943	55.6	3.1
1944-1948	51.2	3.1
1949-1953	56.4	3.3
1954-1958	62.6	3.6
1959-1963	81.0	4.4
1964	107.8	5.5
1965	126.1	6.8

Source: See Statistical Sources, infra, pp. 171ff.

Despite differences in actual tonnage exported after the 1930's, the relationship of fresh exports to fresh sales was relatively stable throughout two decades, ranging around 3 percent. In the past five-year period, however, there has been not only an increased tonnage but also an increased share that exports have shown of all fresh sales of apples. Thus, although not approaching prewar levels, there has been noticeable expansion of foreign markets for fresh apples in the past five or six years, which illustrates the amount of attention and care devoted to the development of new trade channels as well as the maintenance of existing markets. It also demonstrates the fluctuations caused by the variation in production in other exporting countries.[1/] Apples are, in large part, a commercial "dollar" commodity not subject to exigencies of "aid" categorization; thus, the fact that over 4 percent of all fresh apple sales currently go to export markets represents entirely dollar amounts. The United Kingdom and Canada are large, important markets for these exports. Sweden is a relatively large market for United States apples in Western Europe; Venezuela and Finland also take substantial tonnage.

Canned apples and applesauce have remained a relatively small segment of the United States exports of canned fruit--so small, in fact, as to be excluded in most general discussions of noncitrus fruit prospects.[2/] The United Kingdom, which had been an important market for United States canned apples and applesauce in the 1930's, now is supplied mainly by Canada, other Commonwealth countries, and Western European producers. United States exports still go, in the main, to the United Kingdom, Canada, and Venezuela, but in very small volume.

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1/ Notably Argentina, a midwinter supplier in the European market. Note that during the 1965-66 season, some 6.1 million boxes of United States apples went into export (representing $26 million), the largest amount in over a quarter of a century. This was in large part due to the short apple crop in Europe and Argentina. See U. S. Foreign Agricultural Service, "The Foreign Market for U. S. Fruits," Foreign Agriculture, December 5, 1966, p. 7.

2/ For example, see U. S. Economic Research Service, "Processed Noncitrus Fruit Review," Fruit Situation, TFS-159, June, 1966, pp. 15-18, with accompanying special tables.

Apricots[1/]

Production

In contrast to apples, apricots are predominantly a California crop. Since California dominates national production, it should be remembered throughout this section that national and California trends are not being compared but rather that California trends are national trends.

Apricots are used fresh, canned, or dried with frozen utilization added in recent years. Apricot nectar was also an added utilization of the 1940 period. All major utilizations are also predominantly California based. Earlier studies showed apricot production tending to run in cycles rather than following a consistent trend. The present view of the past 30 years shows somewhat the same tendency, although production seems to be trending steadily upward (when considered by five-year averages) for the past 10 years or more (Table 30). Although increasing production has been characteristic of recent years, levels of the 1930's have not been reached as yet. Despite shifts in location of production for other fruits and vegetables with increasing scientific and technological innovation, California continues to grow over 90 percent of all apricots produced in the United States. Washington and Utah are the only other states in which commercial apricot acreage is recorded. Wide annual fluctuations to which apricot production is subject are noted over all the years, but several peak years of the prewar period during which over 300,000 tons of apricots were produced have never been exceeded in post-World War II experience.

A point of particular interest for California apricot producers for fresh market is the interrelationship with early season peaches. Although this aspect

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1/ For discussion and description of the apricot industry and its more specific problems, see:

California Bureau of Marketing, The California Apricot Industry, by Richard E. Gassman (Sacramento, 1966), 20p.

Jerry Foytik, California Apricot Industry: Trends and Outlook, California Agricultural Experiment Station Extension Service Circular 495 (Berkeley, 1961), 31p.

Apricot Producers of California, "Apricot Industry: Facts and Figures" (Berkeley, 1968), 6p.

TABLE 30

Apricots: Production, United States and California
Annual Averages, 1934-1938 to 1959-1963; Annual, 1964 and 1965

Period	Production	
	United States	California
	thousand tons	
1934-1938	229.6	216.0
1939-1943	201.0	179.4
1944-1948	265.9	235.4
1949-1953	203.2	187.6
1954-1958	187.6	167.2
1959-1963	205.4	192.4
1964	220.1	207.0
1965	226.0	225.0

Source: See Statistical Sources, <u>infra</u>, pp. 171ff.

of the substitutability of fruits will not be documented in this report, it is understood in the trade that particularly in the eastern and midwestern markets apricots actively and directly compete with these early peaches which originate in other states, particularly Georgia and South Carolina.

Bearing Acreage

Figures show there has been a steady decrease in bearing acreage in California and, therefore, in the United States for over 35 years (Table 31). In the 30 years of this report, the trend has been steadily downward, measured in 5-year intervals; and an earlier report showed only one period of increase at the end of the 1920's.

It is to be noted that more recently the decline in bearing acreage has slowed considerably, particularly during 1959-1963. In 1963 and 1964, for the first time in the past 30 years, there were small annual increases in bearing acreage of California apricots. Santa Clara and Stanislaus are the major apricot producing counties in California, and it is in the latter location that the major nonbearing acreage is located.[1/] Clearly, a shift in apricot production within the state seems to be in the making.

Nonbearing Acreage

Since bearing acreage in apricots has recently taken a slight upturn, it is clear that the strong uptrend in nonbearing acreage (shown in table 32) of the past 15 years has overtaken the pullout or abandoned acreage that has been the result of urbanization in the coastal areas of California. As our data show, nonbearing acreage had been decreasing during the first two decades covered, and it took more than a decade of increased nonbearing acreage to show any upturn in bearing acreage as well. This increase is not, as yet, reflected in any upturn in five-year annual average figures.

Yield

As has been characteristic of many deciduous fruits, yield of apricots has followed an upward trend throughout most of the period under consideration

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1/ The six major producing areas are Santa Clara Valley, northern San Joaquin Valley, Sacramento Valley (Winters and Fairfield area), Brentwood-Oakley area of Contra Costa County, Hemet area of Riverside County, and Monterey-Santa Cruz.

TABLE 31

Apricots: Bearing Acreage, United States and California
Annual Averages, 1934-1938 to 1959-1963; Annual, 1964 and 1965

Period	Bearing acreage	
	United States	California
	thousand acres	
1934-1938	80.2	75.7
1939-1943	74.5	69.3
1944-1948	a/	66.1
1949-1953		45.4
1954-1958		38.2
1959-1963		36.3
1964		37.5
1965		36.0

a/ Blanks indicate no data available.

Source: See Statistical Sources, infra, pp. 171ff.

TABLE 32

Apricots: California Nonbearing Acreage
Annual Averages, 1934-1938 to 1959-1963
Annual, 1964 and 1965

Period	Nonbearing acreage
	thousand acres
1934-1938	5.7
1939-1943	4.9
1944-1948	3.1
1949-1953	1.7
1954-1958	3.7
1959-1963	6.4
1964	3.3
1965	3.2

Source: See Statistical Sources, <u>infra</u>, pp. 171ff.

(Table 33). This is true despite steadily decreasing bearing acreage. Annual variations in yield have been striking; yet, the 5-year annual average shows increased yield to be characteristic of the past 20 years. In two separate years of the past decade (1955 and 1960), apricots have been produced at an unusual 6.5 tons per bearing acre or close to that figure; but, in general, annual average yield of the last 5 years is more than double that of the 1939-1943 period and shows an increase of more than 80 percent over the 1934-1938 period, 30 years before.

It is clear that fluctuating production in apricots has been influenced by varying yet, on the whole, increasing yield which has dominated the counter trend of decreasing bearing acreage.

Sales--Total, Fresh, and Processed

One focus our investigation takes is to illustrate the relationship between fresh and total sales of each deciduous fruit and the shifts over the past 30 years (Table 34). In the United States as a whole, fresh sales of apricots showed steady increases in the prewar period and wide fluctuations thereafter. Although total sales have shown strong annual and five-year annual average variations, they are not necessarily in the same direction as fresh sales. For example, while total sales increased to nearly 200,000 tons per year during the 1957-1963 period, fresh sales decreased 15 percent from the previous five-year period to slightly under 20,000 tons. Yet, shifts were not in opposite directions throughout the decade, and in the single year of 1964 both total and fresh sales showed strong increases.

Processed apricots--canned, dried, and juice--have varied widely in tonnage sales over these three decades in both California and the nation and are essentially the dominant factor in total apricot sales, in contrast, for example, to the experience in apples.

The fresh market is only a small channel for the commercial production of this specialty crop. The major difference to be noted in figures dealing with apricots and various other deciduous fruits is that there has not been a steady shift to processed outlets away from fresh; rather, processed apricot tonnage has been strongly variable over the years, with swings which showed a general downward trend over the postwar decades.

The 1955 study for fresh sales of apricots showed them to be slightly more stable from year to year than total sales. Present indications show that this

TABLE 33

Apricots: Yield, United States and California
Annual Averages, 1934-1938 to 1959-1963; Annual, 1964 and 1965

Period	Yield	
	United States	California
	tons per bearing acre	
1934-1938	2.87	2.85
1939-1943	2.68	2.59
1944-1948	a/	3.56
1949-1953		4.13
1954-1958		4.38
1959-1963		5.31
1964		5.60
1965		6.20

a/ Blanks indicate no data available.

Source: See Statistical Sources, infra, pp. 171ff.

TABLE 34

Apricots: Total, Fresh, and Processed Sales, United States and California Annual Averages, 1934-1938 to 1959-1963; Annual, 1964 and 1965

Period	United States			California		
	Total sales	Fresh sales	Processed sales	Total sales	Fresh sales	Processed sales
	thousand tons, fresh-weight basis					
1934-1938	226.3	25.1	201.1	214.3	16.2	198.1
1939-1943	195.3	30.8	164.6	175.1	16.8	158.3
1944-1948	256.5	45.9	201.7	228.5	25.2	203.3
1949-1953	197.9	31.2	166.7	184.9	20.2	164.7
1954-1958	183.2	23.7	159.4	165.5	11.3	154.2
1959-1963	198.7	19.3	179.3	187.0	10.8	176.2
1964	217.0	19.3	197.5	206.4	12.5	193.9
1965	210.2	14.4	195.8	209.8	13.6	195.8

Source: See Statistical Sources, infra, pp. 171ff.

generalization is no longer true. The fresh outlet tended to absorb more of total sales during the first 15 years of our series than during the last 15 years. The current share indicates between 9 and 10 percent going to fresh market of the nation as a whole, with California percentage slightly lower.

Dried apricots are particularly influenced by export markets; and canned apricots, which are also affected by exports, are more strongly interacting with demand for other canned fruits. A detailed study of apricots for processing, with a breakdown of figures showing the tonnage dried and canned, would complete the picture for the apricot industry; but this is more detail than we can justify for our present purpose.[1/] Still, it is important to remember that new processed utilizations such as frozen apricots and pulp are a possible stabilizing factor in an industry with considerable problems of outlet insecurity. Tonnage going into freezing has more than doubled over the past decade and currently runs over 3 percent of all apricots sold in California. Apricots going into canning have shown increases on an annual average basis in the 1959-1963 period, while the percentage of apricots going to drying (which has taken as much as 30 percent of the annual crop in past periods) has noticeably decreased in the more recent period.

Grower Prices

Some upward trends in prices to apricot growers were shown throughout the prewar years and into the mid-1950's, but the drop in the most recent five-year period illustrates the difficulties faced by apricot growers who clearly have not shared in the general economic growth gains (Table 35). Some increases in total sales already noted, coupled with decreasing fresh market share of total sales also mentioned, brought only slightly increased prices in 1959-1963 for fresh apricots over prices of a decade earlier. The processed outlets also showed relatively small increased returns to growers for somewhat larger tonnage sales effected in 1959-1963 over 1949-1953. Clearly, apricot prices have scarcely been able to keep even with the rising price levels through 1964. It should be remembered, however, that in price, as in apricot production itself, large annual fluctuations are recorded over all these years.

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1/ For a further description of the dried apricot industry and its statistics, see California Federal-State Market News Service, California Dried Apricot Summary, 1966 (Sacramento, 1967), 12p. For a pictorial history of specialized interest, see Robert Couchman, The Sunsweet Story (San Jose, California: Sunsweet Growers Inc., 1967), 139p.

TABLE 35

Apricots: California Average Grower Prices, All Uses
Annual Averages, 1934-1938 to 1959-1963
Annual, 1964 and 1965

Period	Grower prices
	dollars per ton
1934-1938	42.00
1939-1943	63.18
1944-1948	93.94
1949-1953	100.58
1954-1958	122.60
1959-1963	115.96
1964	118.00 a/
1965	81.50 a/

a/ Price per ton at packinghouse door: 1964--$124.00 and 1965--$92.60.

Source: See Statistical Sources, infra, pp. 171ff.

Price by Utilization for California

In comparing price to growers for fresh and processed utilization of apricots, it is particularly interesting to note that in the 1934-1938 period, the price to growers seems to have been higher for apricots going into processing than the fresh price (Table 36). It is possible that this was the case at that time since drying was the major processing use. Since the 1934-1938 period, fresh price has tripled and processed price is two and one-half times that of the early five years. Yet, it will be noted that 1954-1958 marked the peak fresh and processed prices and, at that time, the proportionate increase was about the same with fresh price reaching 381 percent and processed price at 285 percent of the 1934-1938 period. In the 1964 single-year quotation, fresh apricots again show a strong peak in price, but processed price is only slightly advanced over the annual average of the 1959-1963 period.

It is clear that both fresh and processed price have made striking increases in dollar terms since the 1930's, much being attributable to the influence of inflation. But in addition, at peak fresh prices, the disparities between fresh and processed price in dollars per ton have been as great as $31 per ton, reached in 1954-1958. The amount that fresh price exceeded that of processing price to growers was 26 percent of the average annual processed price for the 1954-1958 period and just over 20 percent of the fresh price.

In the most recent five-year period (1959-1963), the difference between fresh and processed price to growers has been approximately $10, a narrower difference than in most of the other periods. The 1964 return to a wide price difference (in this one year it favored fresh utilization by over $50) has yet to be evaluated in long-run terms, but it is clear from the overall view of 30 years' experience that a wide disparity between fresh and processed price (with fresh price the more remunerative to growers in California) has been the major characteristic of price trends in apricots.[1/]

United States Per Capita Disappearance--Fresh and Processed

The total per capita disappearance of apricots cannot readily be ascertained in a meaningful fashion. This is, in general, because of difficulties

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1/ It has been suggested that in both fresh apricots and fresh plums the reporting of price to growers for fresh market in California has presented special problems in recent years when "packed price" has been included with loose or bulk quotations. Specialized price studies would need to be extremely careful with the definition of "fresh price" for apricots.

TABLE 36

Apricots: California Weighted-Average Grower Prices, Fresh and Processed Annual Averages, 1934-1938 to 1959-1963; Annual, 1964 and 1965

Period	Fresh	Processed
	dollars per ton, fresh-weight basis	
1934-1938	39.90	42.27
1939-1943	70.84	61.89
1944-1948	111.42	91.88
1949-1953	119.60	98.33
1954-1958	152.00	120.46
1959-1963 a/	121.04	111.69
1964	163.00	112.05
1965	112.00	87.84

a/ Recent minor revisions in seasonal prices for 1959-1963 have not been included. Their inclusion would not change five-year average by as much as 1 percent.

Source: See Statistical Sources, infra, pp. 171ff.

of converting various apricot products to a common fresh-weight basis. Rough estimates have been previously made on an overall basis; but more accurate, useful trend patterns can be developed by separate reporting. Therefore, our five-year annual average computations have been made on two different bases and are presented here in that form in Table 37. Fresh consumption is quoted on a fresh-weight basis and canned and dried apricots (the major processed forms) on a product-weight basis. At the present time, dried apricots are estimated to be on a 6 to 1 ratio, farm weight (natural condition before packing), and canned apricots are quoted at a conversion factor of .717 from farm weight. But these relationships vary widely from season to season; and, therefore, over the decades of our investigation, it seems well to illustrate the consumption on the two bases, further subdividing canned and dried apricots to show each on its own.

In this fashion, it is evident that fresh apricots increased in fresh per capita disappearance from the mid-1930's until after World War II recovery. Thereafter, fresh consumption seems to have decreased to one-half of that experienced in the 1930's. Canned apricots have maintained a relatively stable per capita disappearance throughout the 30 years, with the pre-World War II period (taken as a whole) showing little or no change. It is in dried apricots that the marked decreases in per capita consumption seem to be found. Here, the steady downward trend, measured in product-weight terms, means that per capita disappearance is less than a third of that of the mid-1930's.

Exports

United States Fresh and Dried Apricot Exports.--Although fresh apricots cannot be called an important export commodity, it is interesting to note that a relatively stable tonnage has been shipped abroad, averaging around 2,000 tons annually over the past 15 years. However, this export tonnage of fresh apricots has represented a steadily increasing percentage of total fresh sales during this same period (Table 38).

While fresh exports have been maintained at approximately the same level in recent years, dried apricots seem to have fluctuated in a decreasing trend; and canned apricots, the important export commodity of the three, have varied widely from year to year also in a declining direction.

TABLE 37

Apricots: United States Per Capita Disappearance
Annual Averages, 1934-1938 to 1959-1963; Annual, 1964 and 1965

Period	Fresh	Processed	
		Canned	Dried
	pounds per capita	pounds per capita, product weight	
1934-1938	.4	.9	.20
1939-1943	.5	.8	.10
1944-1948	.7	1.4	.20
1949-1953	.4	1.0	.14
1954-1958	.3	1.0	.09
1959-1963	.2	1.0	.07
1964	.2	1.0	.06
1965	.1	1.1	.07

Source: See Statistical Sources, <u>infra</u>, pp. 171ff.

TABLE 38

Apricots: United States Fresh Exports
Annual Averages, 1934-1938 to 1959-1963; Annual, 1964 and 1965

Period	Fresh exports	Fresh export as percent of total fresh sales
	thousand tons	percent
1934-1938	a/	
1939-1943	1.78	5.8
1944-1948	1.63	3.5
1949-1953	2.18	7.1
1954-1958	2.19	9.3
1959-1963	1.97	10.1
1964	1.76	7.8
1965 b/		

a/ Blanks indicate no data available.

b/ United States apricots are no longer listed separately as fresh exports but are included in the category "stone fruits."

Source: See Statistical Sources, infra, pp. 171ff.

Canada is the primary recipient of most fresh apricot exports, with Mexico an expanding second in importation. Venezuela is a considerably smaller third in imports of United States fresh apricots.[1/]

Dried apricots, although decreasing in total exports, have found a major new export market in Japan where tonnage has shown increases as the European Economic Community (EEC) countries and the United Kingdom, although still the market of major size, have shown noticeably declining tonnage taken from United States exporters.

United States Canned Apricot Exports.--In the five-year period of the 1960's, it should be noted that there has been a fluctuation in canned apricot exports that has also trended downward. Canada, currently the most important single-country market for both fresh and canned United States apricot exports, has tended to import somewhat less annually than in the previous five years; and the Common Market countries are currently importing decreasing quantities as well. The major change in export markets over the three-decade span, however, is the shift in United Kingdom purchases (Table 39).

In the 1934-1938 period, the United Kingdom imported annually nearly 1.5 million cases of canned apricots--over two-thirds of all imports of this commodity. By the 1957-1961 period, the United Kingdom had increased its total annual average imports of canned apricots by 50 percent, but the United States supplied on an annual average only 18,000 cases of this amount. Commonwealth countries (Australia and South Africa) were the major suppliers with Spain assuming a strong position. This has remained true in the 1960's shown here, with South Africa very definitely the present major exporter of canned apricots to the United Kingdom.

Present indications do not hold out much hope to California producers for expansion of exports to the Common Market as levels for fruit importation are now being set; and intercountry preferences give outside suppliers a higher, if not insuperable, barrier across which to trade. Current trade negotiations between the United States and the Common Market countries, emphasizing fewer nontariff restrictions on canned fruit, are now of particular interest for canned apricot exporters with some hope of a lessening of these constraints. Shifts in export markets are also being made, with Japan showing increasing importance as an importer of United States apricots in processed forms.

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1/ Fresh apricots are exported in such small volume that they are no longer (after 1964) reported separately in the U. S. Department of Commerce compilations. They are now included in the category "stone fruits."

TABLE 39

Apricots: United States Canned Exports
1960-1965

Marketing year[a]	Canada	United Kingdom	Common Market	Total exports to all countries
	thousands of cases; 24 No. 2½ basis[b]			
1960-61	56	32	101	246
1961-62	53	46	214	387
1962-63	32	14	70	173
1963-64	48	10	75	180
1964-65	33	5	48	137

a/ Beginning June 1.

b/ 45 pounds = standard 24 No. 2½ cans.

Source: U. S. Economic Research Service, Fruit Situation, TFS-158, June, 1966, Table 8, p. 27.

Sweet Cherries

Production

In the United States, reference is actually made to two major types of cherries--"sweet" and "sour." As far as the fresh fruit is considered, sweet cherries are the most meaningful in an economic sense, and California commercially grows only sweet cherries to any extent. Both sweet and sour cherries are processed--in canned, brined, and dried form. The disposition of California sweet cherries is largely in fresh sales and in brining.

California is the leading sweet cherry-producing state.[1/] Other western states which produce sweet cherries are Washington, Oregon, and Montana. Because of early maturity, California seasonally markets a large volume of its fresh cherries before other areas. Michigan is the leading eastern state in sweet cherries, but sour cherries are also produced in Michigan and other Great Lake states just as they are in the other western states. The sour cherry crop is now utilized in the main for freezing and canning. Fresh sales and brining of the sour cherry are very minor channels of utilization.

Thus, it is reasonable to say that California sweet cherry production is important but not unique in United States sweet cherry production and that in large part the specific utilization of sweet cherries does not duplicate the utilization of sour cherries. The comparative trends for United States and California production are presented in tabular form here for 1934-1964 in five-year annual averages. A breakdown of figures between United States sweet and sour cherry production was not available until 1938. Therefore, combined cherry production for the United States is included. United States sweet cherry production is also tabulated from 1939 to date. California production refers to sweet cherries only and covers the entire 30-year period.

The five-year annual-average tabulation (Table 40) enables one to see that despite very wide fluctuations in annual production of cherries in the United States, there was an overall increase in United States production of all cherries through the mid-1950's which has leveled off in the succeeding decade. Sweet cherry production for the United States as a whole is recorded as a somewhat decreasing percentage of all cherry production over the years in which

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1/ For further discussion, see Foytik, California Cherry Industry: Trends and Outlook, California Agricultural Experiment Station Circular 501 (Berkeley, 1961), pp. 3-34.

TABLE 40

Cherries: Production, United States and California
Annual Averages, 1934-1938 to 1959-1963; Annual, 1964 and 1965

Period	United States		California
	All cherries	Sweet cherries	Sweet cherries
	thousand tons		
1934-1938	139.7	a/	21.3
1939-1943	166.3	80.5	23.6
1944-1948	191.2	91.8	30.1
1949-1953	230.4	96.6	32.3
1954-1958	213.5	92.6	27.5
1959-1963	222.2	87.1	21.5
1964	392.9	116.3	31.0
1965	264.1	85.2	30.7

a/ No data available.

Source: See Statistical Sources, infra, pp. 171ff.

separate figures are available. Thus, in the 1939-1943 period, United States sweet cherry production was nearly half of all cherries grown in the United States and in the 1959-1963 five-year period, 39 percent. Trends in sweet cherry production for the United States as a whole, however, have followed the same general pattern as that of total cherry production. Total United States sweet cherry production is greater in the last five-year average period (1959-1963) than in the 1930's but not as great as it had been in the mid-1950's.

California sweet cherry production has an interesting pattern of its own. In looking at annual figures, it would almost seem that there is a biennial fluctuation with a possible cultural cause. However, this tendency is not found throughout the entire three decades and is not apparent in the series when taken on a five-year annual average basis. The apparent trend of increasing production through the mid-1950's, with decreases thereafter, has brought California sweet cherry production of the 1959-1963 period to the level of the 1934-1938 period. This is not true of either United States production of all cherries nor inferentially of United States production of sweet cherries alone. In the 25 years for which we can make comparisons, California has been producing 30 percent and over of United States sweet cherries until recent years. In the last six years, California's share of total United States sweet cherry production has been 25 percent or slightly less.

Since California sweet cherries are the only variety used fresh in any sizable tonnage, it could be said that California's proportionate decrease in United States cherry production may be seen as a part of the trend away from fresh utilization of all deciduous fruits. This relationship should be subjected to further scrutiny in other states which commercially produce both varieties to determine its overall validity. As it is, California sweet cherry production, which was about 15 percent of all cherry production in the 1934-1938 period, has declined to less than 10 percent of the total United States production of cherries by the 1959-1963 period and has trended downward throughout the last decade.

Bearing Acreage

In noting five-year annual average periods in Table 41, it is interesting that sweet cherry bearing acreage has been increasing in recent years after it had remained relatively stable in the decade after World War II. These trends have not been observed in other fresh deciduous fruit statistics. The

TABLE 41

Cherries: Bearing Acreage, United States and California
Annual Averages, 1934-1938 to 1959-1963; Annual, 1964 and 1965

Period	Bearing acreage	
	United States	California
	All cherries	Sweet cherries
	thousand acres	
1934-1938	106.1	14.5
1939-1943	105.8	13.3
1944-1948	a/	12.1
1949-1953		9.6
1954-1958		9.4
1959-1963		10.4
1964		11.3
1965		10.7

a/ Blanks indicate no data available.

Source: See Statistical Sources, infra, pp. 171ff.

characteristic decrease in acreage from the mid-1930's through the war years was similar to all other deciduous fruit acreage experience.

Nonbearing Acreage--California

As might be expected from the more recent increases noted in California bearing acreage of sweet cherries, nonbearing acreage also has shown an upward trend (Table 42). Increases in nonbearing acreage, which began to be apparent in the immediate post-World War II period, have continued almost to the present; whereas, bearing acreage has only increased in the most recent five-year period covered by this study. It is clear that the doubling of nonbearing acreage between the five-year periods, 1944-1948 and 1949-1953, did not quite maintain the bearing acreage in the 1954-1958 period, but subsequent increases did enable sweet cherry trees to show actual bearing acreage increases. Santa Clara and San Joaquin counties are the major producers of sweet cherries in California with the latter also having the major share of nonbearing acreage.

Yield

Studies which were made to compare United States and California yields for the prewar period were, of necessity, comparing yield figures of all cherries in the United States with sweet cherries in California. Since even total United States figures are no longer available, our study presents California yield trends alone. Relevant comparisons might be made with Washington and Oregon if statistics were available for sweet cherry acreage alone. Without this much detail, Table 43 illustrates California's experience--annual average yield of sweet cherries increased, measured by five-year intervals, for two decades between 1934 and 1954, followed by decreasing yields per bearing acre recorded in the decade since 1954.

When annual figures for sweet cherry yield in California are surveyed, it becomes apparent that fluctuations of a striking nature seem to be noted every two or three years. The two highest yield years, however, were 1949 and 1952 when more than four tons of sweet cherries per bearing acre were harvested. Since that time, as before, yields were at much lower tonnage rates. California sweet cherries, therefore, definitely have not shown characteristic increased yield trends in recent decades as have other deciduous fruits.

It must be remembered that cherry trees are "particular" about the conditions under which they thrive. They are susceptible both to drought and to

TABLE 42

Sweet Cherries: California Nonbearing Acreage
Annual Averages, 1934-1938 to 1959-1963
Annual, 1964 and 1965

Period	Nonbearing acreage
	thousand acres
1934-1938	2.5
1939-1943	1.1
1944-1948	1.1
1949-1953	2.3
1954-1958	3.6
1959-1963	3.9
1964	2.4
1965	2.3

Source: See Statistical Sources, <u>infra</u>, pp. 171ff.

TABLE 43

Sweet Cherries: California Yield
Annual Averages, 1934-1938 to 1959-1963
Annual, 1964 and 1965

Period	Yield
	tons per bearing acre
1934-1938	1.47
1939-1943	1.77
1944-1948	2.48
1949-1953	3.37
1954-1958	2.92
1959-1963	2.08
1964	2.80
1965	2.90

Source: See Statistical Sources, infra, pp. 171ff.

excessive soil moisture. Thus, newly planted areas which have been developed as older acreage succumbed to increasing pressures of urbanization may, as yet, be inadequately tested for yield characteristics.

Decreases in California sweet cherry production for the 1959-1963 period, coupled with a small increase in bearing acreage for the same five-year period, resulted in a decline of nearly 30 percent in annual average yield in that same five-year period. Although California sweet cherry production has shown strong variations in given years, little or nothing in general trends noted so far would suggest that increased average production, yield, and bearing acreage could be anticipated even in the next five-year period.

Sales--Total, Fresh, and Processed

In addition to a breakdown for fresh and processed, figures for total sales of all cherries for the United States are available for the three decades of this study; they are quoted here (Table 44). More relevant for comparative purposes are the sweet cherry figures which are available only since 1938. Total sales of all cherries for the United States trended upward from 1934 through 1954, although fresh sales did not increase in proportion and maintained an almost flat level under 47 tons for the period 1939-1953. Thus, the total sales increases were strongly influenced by an increased proportion of sales going into processing. Total sales of all cherries, after a 5-percent decrease in the 1954-1958 period, regained a position close to sales of the high period of 1949-1953. During this time, shifts were taking place since decreasing tonnage went to fresh sales; and in the recent period, strongly increasing sales went to processed cherries.

Viewing United States sweet cherry production alone, upward trends in total sales flattened and then turned downward during the period cofered by five-year averages. Fresh sales, which increased steadily to an annual average high of nearly 40 million tons during 1949-1953, decreased just as steadily thereafter. Fresh sales had a 50-percent share of all United States sales of sweet cherries in the 1939-1943 period. In the next decade, this was 44 percent measured by annual averages over five years; and in the recent decade, this had fallen to 37 percent. Total sales of United States sweet cherries for processing increased steadily from 1939 to 1959 on an annual average five-year-period basis but have decreased somewhat in the more recent period.

TABLE 44

Cherries: All Sales for United States and Sweet Sales for United States and California Annual Averages, 1934-1938 to 1959-1963; Annual, 1964 and 1965

Period	United States						California		
	Total sales		Fresh sales		Processed sales		Total sales	Fresh sales	Processed sales
	All	Sweet	All	Sweet	All	Sweet	Sweet		
	thousand tons, fresh-weight basis								
1934-1938	121.9	a/	42.6		79.3		20.1	10.7	9.3
1939-1943	147.8	69.5	46.7	34.9	101.1	34.6	21.5	12.0	9.5
1944-1948	179.1	85.1	46.5	37.3	132.7	47.8	29.8	13.6	16.2
1949-1953	216.7	89.8	47.5	39.6	168.9	50.1	32.0	14.7	17.3
1954-1958	207.1	88.5	40.2	33.7	166.9	54.7	27.2	11.6	15.6
1959-1963	230.1	97.8	36.5	30.7	193.6	67.1	21.2	9.2	11.9
1964	340.7	116.3	52.6	45.8	288.1	70.4	30.2	15.8	14.2
1965	244.9	85.2	33.3	28.4	211.7	56.8	30.7	17.6	13.1

a/ Blanks indicate no data available.

Source: See Statistical Sources, infra, pp. 171ff.

It is interesting to note that brining and canning are the two major ways in which sweet cherries are processed. Brined cherries are converted into maraschino and glace cherries and are used mainly in fruit cocktail (and fruit salad), baked goods, candies, ice cream, etc. This utilization has increased markedly in recent years (it originated in the 1930's), while canning, as such, has remained a relatively stable use for sweet cherries.

California total sales of sweet cherries have followed neither the pattern of United States total sales of all cherries nor United States sales of all sweet cherries, although they are close to the latter. Total sales of California sweet cherries continued to increase from 1934 to 1953 and then decreased rapidly thereafter. The total California sweet cherry sales figure for the 1959-1963 period was below the tonnage figure recorded for the 1939-1943 period. This meant, therefore, that California growers who had been selling between 30 and 40 percent of all United States sweet cherries until the mid-1950's have a present share closer to 25 percent. In processing, the California pattern of sales seems to show jumps and leveling off. For the decade 1934-1944, sales of sweet cherries to processing stayed almost the same. For the 1944-1959 segment of time, processing sales were relatively stable at a higher tonnage--an increase of 40-45 percent; 1959-1963 tonnage for processing was a considerable drop--not all the way to earlier levels but a sharp decline of nearly 25 percent.

California utilization has not shown as definite a trend away from fresh use for sweet cherries as has been evident for other deciduous fruit, but there is a somewhat decreasing share recorded. Of all sweet cherries in California, 55 percent went to fresh sales in the prewar period, nearly 46 percent in the 10 years between 1944 and 1954, and nearly 43 percent since then. However, this division between fresh and processed utilization for sweet cherries is closer than in any other California deciduous fruit. The California relationship between fresh and processed use has not shown the decreasing proportions noted in United States total sweet cherry fresh utilization. It is perhaps relevant here that California does not freeze cherries, cans a relatively stable proportion (nearly 3,000 tons per year), and brining is the largest processing ulilization. Wide annual swings in tonnage brined fluctuate from lows of 5,000 tons to highs over 11,000 tons.

It is estimated that about 1.5 and 1.65 pounds of brined cherries are used per standard case (24 No. 2½ cans) for fruit cocktail and fruit salad, respectively. (Royal Anne and Bing cherries are both used in the process.) Since the

introduction of commercial brining in 1924, California has declined somewhat in the average share of brining done in the United States. But it is estimated that the canning of fruit cocktail (and fruit saled) is the major outlet for California sweet cherries with about one-third of the state's production going into these products.[1/]

Grower Prices

There is no data for the 1934-1938 United States average price to growers for sweet cherries. Differences in definition of official California and United States grower prices hold for cherries as well.[2/] With these two factors in mind, trends in grower prices are presented in Table 45. With the exception of price declines in the 1949-1953 period for both California and the United States, grower prices have risen steadily over the 30-year period. The upward trends are similar with California prices recorded at a higher figure throughout. By definition, price to California growers could be expected to be slightly below national figures; the high California price is, therefore, the more striking. In addition, it must be noted that California prices have tended to widen the spread between the state average prices and the national average farm price over time. In the 1959-1963 period, the difference was over $42 per ton with price to California growers showing a 16-percent increase over the average annual price recorded in the 1954-1958 period. Further, the price decline noted in 1949-1953 was only 8 percent as opposed to a 14-percent decrease in the United States. The "recovery" of California grower prices was also stronger with a 19-percent increase in California but only a 12-percent increase noted for the United States.

Price by Utilization for California

Two deciduous fruits had to be excepted from the generalization that fresh utilization brought higher grower prices than did processed. This was, of course, for a specific period--1934-1938. The first exception was in apricots. The second is indicated here in Table 46 for sweet cherries. In the case of

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1/ Ibid., p. 24.

2/ Ibid.

TABLE 45

Sweet Cherries: Average Grower Prices, All Uses, United States and California Annual Averages, 1934-1938 to 1959-1963; Annual, 1964 and 1965

Period	Grower prices	
	United States	California
	dollars per ton	
1934-1938	a/	114.34
1939-1943	136.34	153.06
1944-1948	272.20	290.60
1949-1953	234.20	267.00
1954-1958	284.00	318.80
1959-1963	332.20	371.20
1964	290.00	336.00 b/
1965	330.00	395.00 b/

a/ No data available.

b/ Price per ton at processing plant door (now also quoted in California as elsewhere in the United States): 1964--$339 and 1965--$398.

Source: See Statistical Sources, infra, pp. 171ff.

TABLE 46

Cherries: California Weighted-Average Grower Prices, Fresh and Processed Annual Averages, 1934-1938 to 1959-1963; Annual, 1964 and 1965

Period	Fresh	Processed
	dollars per ton, fresh-weight basis	
1934-1938	114.22	114.61
1939-1943	163.40	136.47
1944-1948	310.00	274.32
1949-1953	315.20	223.42
1954-1958	376.80	274.80
1959-1963 a/	453.60	298.81
1964	412.00	256.27
1965	455.00	321.76

a/ Recent minor revisions in seasonal prices for 1959-1963 have not been included. Their inclusion would not change five-year average by as much as 1 percent.

Source: See Statistical Sources, infra, pp. 171ff.

sweet cherries, however, the difference is so slight as to be almost insignificant in an economic sense. Throughout the remaining years of the three decades of our survey, fresh utilization has the higher grower price and, therefore, it is presumed the higher return to growers. The steady increase in fresh price over the years is attributable in large part to general economic change and price level increases. The increase from the 1934-1938 annual average price to that of the 1959-1963 period is nearly fourfold for fresh prices. Processed prices, however, are a little more than two and one-half times that of the earlier period.

The dollar difference between the utilizations has increased over the years also. By 1959-1963, the annual average processed price was $154.79 per ton lower than the fresh price. In further evidence, the processed price, which had run over 80 percent of the fresh price to growers, fell steadily in this relationship until the most recent five-year period of 1959-1963 showed that processing prices were only about 65 percent of the fresh grower price in California. The single year fluctuations of 1964 and 1965 indicate changing relationships between fresh and processed price as well.

Per Capita Disappearance--Processed and Fresh

Data readily available for per capita consumption do not distinguish between sweet and sour cherries so that all quotations are for all cherries combined. Thus, there is a bias in the figures which emphasizes the trend away from fresh use (sour cherries only show about a 5-percent fresh utilization and have had more marked production increases). The trend in per capita consumption over the entire 30 years can also be shown only on a basis which separates fresh (on a fresh-weight basis) and canned (on a product-weight basis) if officially recorded data are used. Thus, Table 47 indicates trends over time for all cherries consumed fresh and all cherries which have been canned, based on the weight after processing.

With these observations, the decrease in fresh use of all cherries is very striking. Consumption of fresh cherries per capita dropped more than 50 percent during the 1934-1964 period. These decreases were not overcome for the entire cherry industry by shifts to canning since the increases demonstrated by the 1949-1953 years were not maintained; and decreasing canned consumption is not recorded, although the level for canned per capita consumption is still higher currently than it was in the first decade of the survey period.

TABLE 47

All Cherries: United States Per Capita Disappearance
Annual Averages, 1934-1938 to 1959-1963; Annual, 1964 and 1965

Period	Fresh	Canned
	pounds per capita	pounds per capita, product weight
1934-1938	1.1	1.0
1939-1943	1.1	1.1
1944-1948	1.0	1.1
1949-1953	.8	1.5
1954-1958	.6	1.3
1959-1963	.4	1.2
1964	.4	1.3
1965	.4	1.1

Source: See Statistical Sources, <u>infra</u>, pp. 171ff.

In estimates made by the U. S. Economic Research Service, where a detailed study was made of the cherry industry in 1962 using conversions to a fresh-weight basis for consumption data (Table 48), the conclusion was advanced (referring to all cherries) that:[1/]

> "Since 1938, per capita consumption of fresh and canned, sweet and sour cherries combined has declined while that of frozen and brined has increased. The decrease in fresh has been offset by a net increase in processed. Per capita consumption of all varieties, fresh and processed combined on a fresh equivalent basis, trended upward from 1938 to 1950, then downward to 1960, reaching approximately the same level as at the start of the period."

Adapting the estimates made to the time series and averages used in this study, a supplementary table for per capita disappearance is shown which illustrates the trends suggested above (Table 49).

Since there are no separate data available for sweet cherries, and California's commercial production lies entirely in this field, only very rough conclusions can be drawn from the data offered. Since sweet cherries are in large part the variety for brining, the increases noted in this utilization are particularly relevant to California. For this reason, a further refinement of the shorter per capita consumption table indicates trends in per capita consumption for canned and brined cherries from 1944 to 1961, the period of time in which estimates have been calculated on a comparative fresh-weight basis and during which brining figures have been separately recorded.[2/]

While canned cherries (in fresh-weight equivalent) showed their greatest annual average increase in per capita consumption in the five-year period of 1949-1953 (and on a product-weight basis this was also true), there has been a relatively stable consumption of all cherries canned, as such, for the 1950's as a whole. Brining, after establishing the level of nearly .5 pounds per year per person in this utilization, has remained almost constant. Brined cherries, it should be remembered, are also used in canning. Thus, it can be assumed that for sweet cherries there have been shifts, but not strong shifts, away from fresh use and that the possible effect of the shifts may have somewhat reduced total per capita sweet cherry consumption over time.

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1/ Pubols, "Trends in Cherry Production and Use," Fruit Situation, U. S. Economic Research Service, TFS-143, June, 1962, p. 29.

2/ Brining tonnage had been combined with canning in previous years.

TABLE 48

All Cherries: United States Per Capita Disappearance
Annual Averages, 1939-1943 to 1954-1958; Annual, 1959, 1960, and 1961

Period	Total	Fresh	Processed
	pounds per capita, fresh-weight equivalent		
1939-1943	2.48	1.08	1.40
1944-1948	2.58	1.02	1.56
1949-1953	2.94	.82	2.12
1954-1958	2.58	.60	1.98
1959	2.30	.40	1.90
1960	2.20	.40	1.80
1961	2.40	.50	1.90

Source: Figures based on Ben H. Pubols, "Trends in Cherry Production and Use," U. S. Economic Research Service, Fruit Situation, TFS-143, June, 1962, p. 29.

TABLE 49

All Cherries: United States Per Capita Disappearance
1944-1961, Annual averages, 1944-1948 to 1954-1958

Period	Canned	Brined
	pounds per capita, fresh-weight equivalent	
1944	.5	.3
1945	.4	.3
1946	1.4	.4
1947	.6	.4
1948	.8	.4
average 1944-1948	.74	.36
1949	.9	.6
1950	1.3	.5
1951	1.0	.4
1952	1.0	.4
1953	1.0	.5
average 1949-1953	1.04	.48
1954	.9	.6
1955	1.0	.5
1956	.9	.3
1957	.8	.5
1958	.7	.5
average 1954-1958	.86	.48
1959	.8	.5
1960	.7	.4
1961	.7	.5

Source: Ben H. Pubols, "Trends in Cherry Production and Use," U. S. Economic Research Service, Fruit Situation, TFS-143, June, 1962, p. 29.

Exports

As has already been mentioned, sweet cherries make up a small fraction of the mixture in canned fruit cocktail, one of the most important canned fruit exports of the United States. Cherries alone, however, are a comparatively small export crop, both fresh and canned (Table 50); and sweet cherries, as such, are a very small item in overall United States fresh fruit exports. Fresh exports of cherries (assuming all are sweet cherries) have averaged about 2 percent of all United States fresh sales over time. Trade in the fresh cherry market is, in large part, with Canada where the annual net export or import range is slight. For example, in the fiscal year 1963-64, 2.7 million pounds of fresh cherries were exported to Canada by the United States, and 2.9 million pounds were imported from Canada into the United States.[1/]

Italy and Spain are both suppliers of cherries for United States importation, and France is the major supplier of dried, candied, or glacéed cherries. United States canned charries go in very large part to the Common Market countries--Netherlands, Belgium-Luxembourg, and West Germany. The average export of canned cherries from the United States has been about 131,000 cases (standard 24 No. 2½ cans) annually for the five years 1959-60 through 1963-64; but in 1964-65, it jumped to 475,000 standard cases. The striking fluctuations in this export market are clearly shown by the records of the past five or six years (Table 51). It has been suggested that the export channels have been used as a safety valve for oversupply in sour cherries, and it seems very possible that the extremes in annual variation are not a function of the sweet cherry production or marketing as such. Thus, they will not tend to affect or be characteristic of the California crop.

Imports, on the other hand, have shown a markedly steady growth over the five-year period, 1959-60 through 1963-64, in the category which is inclined to be, in large part, sweet cherries (natural, sulphured, or in brine); while dried cherry imports were relatively stable for the same period. These developments may well be of continued interest to California sweet cherry growers.

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1/ The designation for United States imports is cherries--natural, sulphured, or in brine--and for exports is "fresh"; but trade with Canada is, presumably, in large part fresh cherries.

TABLE 50

All Cherries: United States Exports and Imports, 1959-60 to 1964-65

Marketing year[a/]	Exports		Imports	
	Fresh	Canned	Natural, sulphered, or in brine	Dried, prepared, or processed
	thousand pounds	thousand pounds, product weight[b/]	thousand pounds, product weight	
1959-60	2,169	4,830	616	7,553
1960-61	3,472	3,280	770	6,507
1961-62	2,048	5,567	1,102	6,505
1962-63	2,484	13,151	2,116	7,725
1963-64	2,955	2,706	3,154	10,134
Average 1959-60 to 1963-64	2,625.6	5,906.8	1,551.6	7,684.8
1964-65	4,066	21,385	1,792	6,486

a/ Beginning July 1.

b/ 45 pounds = standard case, 24 No. 2½ cans.

Sources:

U. S. Foreign Agricultural Service, Fruit and Vegetable Division, Deciduous Fruit: World Production and Trade Statistics, October, 1964, 56p.

Idem, Canned Fruit: World Production and Trade Statistics, August, 1965, 59p.

U. S. Foreign Agricultural Service, Foreign Agriculture Circular, Canned Fruit, FCAN 2-66, June, 1966, p. 3.

TABLE 51

Cherries: United States Canned Exports, 1959-60 to 1964-65

Marketing year[a]	Canada	United Kingdom	Common Market	Other European	Other	Total
	thousands of cases, 24 No. 2½ basis[b]					
1959-60	15	c/	74	2	16	107
1960-61	20	2	44		7	73
1961-62	7	4	105		8	124
1962-63	18	7	252	3	12	292
1963-64	8	7	31	4	10	60
Average 1959-60 to 1963-64	13.6		163			131.2
1964-65	9	17	422	4	23	475

a/ Beginning July 1.

b/ 45 pounds = standard case, 24 No. 2½ cans.

c/ Blanks indicate no data available.

Sources:

U. S. Foreign Agricultural Service, Fruit and Vegetable Division, Canned Fruit: World Production and Trade Statistics, August, 1965, 59p.

U. S. Foreign Agricultural Service, Foreign Agriculture Circular, Canned Fruit, FCAN-66 June, 1966, p. 3.

U. S. Economic Research Service, Fruit Situation, TFS-159, June, 1966, p. 27.

Grapes

Production

Grapes are produced in California in the greatest volume of all noncitrus fruits. No other deciduous fruit is produced in California in such tonnage, but this leadership is in volume rather than single product. Utilization of California grapes is diversified enough so that processing channels funnel grapes off into a large number of products, raisins and wine being the most outstanding. Although grape varieties are identified closely with their utilization, in our present discussion we will treat all grapes as a single commodity. Our principal interest in this report is the fresh segment of this industry, currently the third most important outlet; although we shall also make some generalizations about the grape industry as a whole.[1/]

Viewed as a single product, by five-year averages, grapes have not shown any strong trends for the United States as a whole over the three decades since 1934. An upward trend in total production, after Prohibition, leveled after the Second World War to a figure under 3 million tons annually. In the most recent 1959-1963 five-year period, however, grape tonnage has shown strong increases, followed by a yearly volume in 1965 of over 4.3 million tons (Table 52).

California experience has paralleled that of the United States in total production of grapes of all varieties. This is to be expected since California grows, on the average, about 90 percent of the United States total. The increased production of the 1959-1963 period in California over the 1954-1958 period, measured on a five-year annual average basis, was nearly 13 percent. The relationship of California grape production to that of the nation as a whole in volume terms has changed relatively little over the 30 years of our study.[2/]

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1/ For further information, see Jed A. Adams, The Grape Industry: Production and Marketing Situation, California Bureau of Marketing (Sacramento, 1966), 34p.

2/ For a comprehensive discussion of economic conditions in the California grape industry, as a whole and by varietal utilization, see Farrell, "The California Grape Industries: Economic Situation and Outlook," Statement presented at a public hearing to consider a proposed marketing agreement and order regulating the handling of grapes produced in California, Fresno, March 14, 1966 (Berkeley: California Agricultural Extension Service), 37p.

TABLE 52

Grapes: Production, United States and California
Annual Averages, 1934-1938 to 1959-1963; Annual, 1964 and 1965

Period	Production	
	United States	California
	thousand tons	
1934-1938	2,346.0	2,118.6
1939-1943	2,600.2	2,394.8
1944-1948	2,936.2	2,772.4
1949-1953	2,903.2	2,709.4
1954-1958	2,866.6	2,622.2
1959-1963	3,314.2	3,020.2
1964	3,478.0	3,145.0
1965	4,351.3	3,975.0

Source: See Statistical Sources, infra, pp. 171ff.

Bearing Acreage

Based on earlier grape bearing acreage figures, both the United States and California seemed to maintain remarkable stability for such a heterogeneous industry. But more recent California figures (comparable figures for the United States are not available) show steadily decreasing bearing acreage from 1947 through 1957. Measured by the five-year periods of our current study, percentage decreases in California on an annual average basis of the 1949-1953 period were greater than the increases of the 1944-1948 period. Continuing downward trends in bearing acreage of grapes through the 1954-1958 period were somewhat counteracted in the most recent 1959-1963 span. There may be, therefore, a tendency to a further leveling off of bearing acreage in California to a total which could run about 11 percent below levels of the later 1930's.

Although Washington on the Pacific Coast and Michigan in the Midwest produce above 50,000 tons annually of grapes commercially, New York is the only other state growing more than 100,000 tons annually. No other area in the United States can be as influential in shaping national bearing acreage trends as California, whose bearing acreage figures are presented here (Table 53).

Nonbearing Acreage

Within California, grapes are grown extensively throughout the state with concentration in the Sacramento and Napa valleys, the lower San Joaquin Valley, and additional acreage in the foothills of the San Bernardino Mountains. Raisin grapes are largely concentrated in the Tulare, Madera, Kern, and Fresno counties in the San Joaquin Valley. San Joaquin is added to the list for table grapes. Wine grapes are concentrated in the counties just listed but also have extensive bearing acreage in Napa and Sonoma counties in the northern area and San Bernardino County in the south. As could be expected, the nonbearing acreage is located in these areas also, but recent plantings add Monterey, Kern, and Stanislaus counties to those already listed.

Fluctuations in nonbearing acreage are noted in Table 54. The 1959-1963 period showed major increases in nonbearing acreage of grapes which are already producing the increases noted in bearing acreage in recent years. It may well be that by the current year these increases have once more leveled off since the 1963-64 average nonbearing acreage is closer to the 1956-57 level.

TABLE 53

All Grapes: Bearing Acreage, United States and California
Annual Averages, 1934-1938 to 1959-1963; Annual, 1964 and 1965

Period	Bearing acreage	
	United States	California
	thousand acres	
1934-1938	657.8	481.3
1939-1943	627.1	486.6
1944-1948	a/	495.0
1949-1953		478.3
1954-1958		416.5
1959-1963		429.2
1964		454.9
1965		459.8

a/ Blanks indicate no data available.

Source: See Statistical Sources, infra, pp. 171ff.

TABLE 54

All Grapes: California Nonbearing Acreage
Annual Averages, 1934-1938 to 1959-1963
Annual, 1964 and 1965

Period	Nonbearing acreage
	thousand acres
1934-1938	34.0
1939-1943	32.4
1944-1948	54.1
1949-1953	21.6
1954-1958	23.9
1959-1963	38.6
1964	26.6
1965	26.5

Source: See Statistical Sources, infra, pp. 171ff.

Yield

The yield experience for grapes, as with bearing acreage, can be discussed only in the California context for the full period of our study. However, California's dominance in grape production makes yield in California the major factor to be reckoned with nationally (Table 55).

The substantial and steady growth in yield exhibited by the California tonnage of grapes is impressive. In the decade 1944 through 1953, yield for each five-year period, measured as an annual average, was at a level of close to 5.6 tons per acre. Other than that decade, however, yields have been increasing despite fluctuating trends in bearing acreage.

Sales--Total, Fresh, and Processed

As a deciduous fruit, grapes are distinguished by the fact that essentially the same raw material may be sold in any of three major outlets--fresh, drying, or crushing. Canning is a relatively minor outlet. Although all outlets are interrelated, the method of handling and appearance of each of these segments of the grape industry are strikingly different. Thus, there is a strong tendency to consider the industry as composed of quite separate parts. The time element is also an essential part of the grape industry segmentation. Early in the production cycle, the decision must be made to produce grapes for fresh shipment. Different cultural practices are used for certain varieties of table grapes; then, the choice is between processing for raisins or for crushing. Wine, of course, has its own varietal requirements. Since crushing can also take grapes that may have been planned originally for fresh shipment, it is often termed a residual outlet.

Total sales of United States grapes (all uses) followed the production pattern of increasing, leveling, and decreasing with new highs in the 1959-1963 period and thereafter as more grapes were produced than had ever been grown in the United States. With the exception of the 1944-1948 period of small increases, grapes have followed a decreasing trend in fresh sales throughout the last 30 years. It is interesting to observe, however, that the relationship of fresh to total sales has not exhibited as steady a downward trend. A relatively constant 19-20 percent of total sales went into fresh channels for the 15 years between 1944 and 1958. In the recent five-year span, however, fresh grapes have averaged less than 17 percent of total sales for the United States as a whole, and the two recent annual figures show a still smaller proportion (Table 56).

TABLE 55

All Grapes: Yield, United States and California
Annual Averages, 1934-1938 to 1959-1963; Annual, 1964 and 1965

Period	Yield	
	United States	California
	tons per bearing acre	
1934-1938	3.58	4.40
1939-1943	4.15	4.92
1944-1948	a/	5.60
1949-1953		5.66
1954-1958		6.30
1959-1963		6.89
1964		6.90
1965		8.60

a/ Blanks indicate no data available.

Source: See Statistical Sources, infra, pp. 171ff.

TABLE 56

All Grapes: Total, Fresh, and Processed Sales, United States and California
Annual Averages, 1934-1938 to 1959-1963; Annual, 1964 and 1965

Period	United States			California		
	Total sales	Fresh sales	Processed sales	Total sales	Fresh sales	Processed sales
	thousand tons, fresh-weight basis					
1934-1938	2,301.2	623.1	1,678.1	2,115.1	492.7	1,622.4
1939-1943	2,563.8	575.5	1,988.4	2,391.6	505.2	1,886.4
1944-1948	2,909.0	585.9	2,363.1	2,767.3	515.8	2,251.5
1949-1953	2,883.0	554.1	2,328.9	2,706.7	531.0	2,175.7
1954-1958	2,853.7	541.5	2,312.2	2,619.5	518.3	2,101.2
1959-1963	3,287.1	538.4	2,748.7	3,005.6	515.7	2,489.8
1964	3,472.1	545.9	2,926.1	3,142.9	521.5	2,621.4
1965	4,320.0	593.5	3,726.4	3,972.9	565.6	3,407.3

Source: See Statistical Sources, infra, pp. 171ff.

California's dominant position in the national grape industry suggests that its pattern of sales might well parallel that of the United States. California's total sales, after all, have averaged above 90 percent of all United States sales. But this utilization parallelism has not been the case; California's fresh sales increased slightly throughout the 1934-1954 period and have not decreased enough since the middle 1950's to bring fresh sales back to 1934 levels. Thus, California's fresh sales of grapes are greater now than in the earlier years--in contradistinction to most other fruits. California fresh sales now represent a larger percentage of total California sales and total United States fresh sales. It was noted, however, at the start of this section that this may be a definition difference, since fresh sales may not actually all be going into fresh consumption. Still, it is an interesting fact that fresh sales of grapes have not only increased over time but have increased proportionally to California production.

United States sales of grapes for processing are currently at levels 60 percent above those of 30 years ago. But from 1944 through 1959, United States grape tonnage going into processing remained relatively constant at a figure near 2.3 million tons per year. The great growth period in grapes for processing came early, of course, after the Prohibition laws were repealed. But the current levels of increase in grapes for processing show even greater vomume growth for the nation as a whole than developed after repeal.

The California experience in grapes for processing parallels that of the United States. But California sent over 95 percent of all United States grapes to fresh sales in the 1959-1963 period (an increased proportion), while 90 percent of all United States grapes for processing channels (a slightly decreased share) were California's.

Without a more detailed breakdown for the processing tonnage, which is not undertaken here, it is simply interesting to note that there has been an increase in the importance of canning as an outlet for grapes in recent years. In 1964, for example, a record 60,000 tons were canned, an increase of 17,000 tons in that year. Canned grapes are mainly used in fruit cocktail, a major California fruit product, and in fruits for salad.

Grower Prices

Average grower returns for grapes for all uses may be a concept of relatively small useful meaning because of the diversification of the grape products

and the segmentation of the industry. Still, it is interesting to note that the initial increases in season average price paid to growers made in the first decade of our study has never been matched. And the actual price (annual average for a five-year period) received during 1944-1948 of $59.16 per ton in California has never been matched for a five-year period average. Observed more deeply, however, it should be noted that the 1946 extreme high produced the average price peak for this period; and several single years in the 1950's have shown California growers receiving better than $50 per ton, though only one year (1958) was recorded at above $60 per ton for grapes for all uses.

United States average price received by growers, it should be noted, runs slightly higher than that in California, in part by definition,[1/] but closely parallels the California trends as should be expected (Table 57). However, the noticeable difference in the last 10 years is particularly worthy of note. The United States average grower price per ton for grapes (all uses) for the 1959-1963 period represented a slight increase over the previous period. In California the average price to grower decreased very slightly at the same time. Therefore, the margin between the California and the United States price widened from an average of $4.14 per ton difference to an average of $5.92 per ton difference. This indicated sizably greater returns to growers in areas other than California since California is the dominant grape growing area by a very wide margin.

The fresh outlet brings the best price in California grapes; canning, drying, and crushing follow in that order. Therefore, a large tonnage of grapes going into crushing will have a depressing effect on price for all grapes. This has evidently been California's experience in recent years as well as marked fluctuations in raisin prices.

Price by Utilization for California

From a perusal of the difference in price to California growers for grapes used fresh and those which were processed (Table 58), the major conclusions are: (1) fresh use has always brought a higher price than processed; (2) the dollars and cents difference was smaller in 1934-1938 than at any other time until 1965; (3) there seems to be no pattern of difference--fluctuations have been

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1/ See *supra*, pp. 30 and 33.

TABLE 57

Grapes: Average Grower Prices, All Uses, United States and California
Annual Averages, 1934-1938 to 1959-1963; Annual, 1964 and 1965

Period	Grower prices	
	United States	California
	dollars per ton	
1934-1938	18.20	16.26
1939-1943	31.00	29.14
1944-1948	62.00	59.16
1949-1953	46.34	42.86
1954-1958	55.38	51.24
1959-1963	55.94	50.02
1964	62.80	55.50
1965	44.90	38.80

Source: See Statistical Sources, infra, pp. 171ff.

TABLE 58

Grapes: California Weighted-Average Grower Prices, Fresh and Processed Annual Averages, 1934-1938 to 1959-1963; Annual, 1964 and 1965

Period	Fresh	Processed
	dollars per ton, fresh-weight basis	
1934-1938	21.94	14.59
1939-1943	44.70	25.80
1944-1948	79.22	54.75
1949-1953	55.58	39.73
1954-1958	68.54	46.87
1959-1963 a/	66.50	48.01
1964	70.80	53.27
1965	44.50	40.39

a/ Recent minor revisions in seasonal prices for 1959-1963 have not been included. Their inclusion would not change five-year average by as much as 1 percent.

Source: See Statistical Sources, infra, pp. 171ff.

characteristic without any notable trend in the price spread; and (4) the processed price to grower has been at times more than 30 percent less than the fresh price.

If the processed utilization were to be further refined, it would be clear that crushing was the least remunerative use. Canning of grapes has consistently returned a higher price to growers than drying. This is, of course, considering the price to growers for drying on a fresh-weight basis. The weight ratio, in general, is 4 to 1 when the final product is obtained.

Thus, it is clear that grape growers very definitely have not been able to reap all the gains inherent in the economic growth of California that have been afforded to growers of some deciduous tree fruits. Processing has been a low-return outlet in general; even drying alone has not been as remunerative as the fresh channels, in contrast to apricots where drying was the more remunerative outlet in many individual years throughout the period we are reviewing.

Per Capita Disappearance--Fresh and Processed

The decreases noted in per capita disappearance of fresh grapes tend to repeat the experience of other fresh fruit (Table 59). In the 1934-1938 five-year period, the annual average per capita consumption of fresh grapes was 6.8 pounds; by 1959-1963, it had decreased to 3.8 pounds. This 44 percent decrease in fresh consumption is possibly counterbalanced by increases in juice consumption, although comparisons in fresh-weight terms are not readily available. The two major processed uses for grapes are included in the table of per capita disappearance in product-weight terms. It will be seen there that juice, which had been measured at .33 product-weight pounds per capita in the 1934-1938 period, increased nearly twofold; although decreases were then noted in the 1944-1948 period of the middle decade of our study. Since 1949, grape juice consumption seems to have been relatively stable over the longer period.

In raisins (including currants), a somewhat different consumption pattern can be discerned. Relatively stable per capita disappearance from 1934 through 1948 has been followed by steady decreases, a characteristic of dried fruit experience. The 32 percent decrease from the levels of 1934-1938, however, is not as severe as the experience of other dried fruits.

TABLE 59

Grapes: United States Per Capita Disappearance
Annual Averages, 1934-1938 to 1959-1963; Annual, 1964 and 1965

Period	Fresh	Juice	Raisins and currants
	pounds per capita	pounds per capita, product weight	
1934-1938	6.8	.33	2.2
1939-1943	6.1	.63	2.4
1944-1948	5.7	.52	2.2
1949-1953	5.5	.63	1.76
1954-1958	4.6	.75	1.64
1959-1963	3.7	.71	1.51
1964	3.5	.65	1.45
1965	3.7	.74	1.54

Source: See Statistical Sources, infra, pp. 171ff.

United States Exports

As with most other fresh fruits in export trade, United States grapes are shipped in large part to Canada. The total tonnage of fresh grapes exported has increased steadily in postwar years, but Canada has remained the major recipient, although various other export channels have shifted in importance. The United Kingdom, which in earlier years imported over 7,000 tons of fresh grapes annually, now averages closer to 2,000 tons from the United States and is supplied in large part by Spain (which has always been the case) and South Africa, with supplements from Greece, Cyprus, and Italy. Asia now provides two markets for United States fresh grapes--Hong Kong and the Philippines. Mexico imports fresh grapes but in decreasing amount from the high of 3,000 tons averaged in the 1956-1960 period. Norway and Sweden are sizable importers of United States fresh grapes and together constitute a bigger market than the United Kingdom in recent years.

United States exports of fresh grapes have not only been trending upward throughout the three decades and sharply upward since World War II but also, as a percentage of fresh sales, have continued a strong uptrend since World War II (Table 60). Thus, fresh grape exports of the 1959-1963 period are, on an annual average, 3½ times the volume of those of the 1934-1938 period and represent 4 times the percentage of fresh sales than did the earlier grape exports. Clearly, technological improvement in shipping under controlled cold air is very important in this increased volume.

Although both raisins and wine are important segments of the grape industry and have important experience in United States export-import trade, their own complex interrelationships will not be presented as a part of this study since they require a detailed presentation of their own.

TABLE 60

Grapes: United States Fresh Exports
Annual Averages, 1934-1938 to 1959-1963; Annual, 1964 and 1965

Period	Fresh exports	Fresh export as percent of total fresh sales
	thousand tons	percent
1934-1938	26.8	4.3
1939-1943	27.5	4.8
1944-1948	33.1	6.1
1949-1953	49.7	9.0
1954-1958	72.7	13.4
1959-1963	93.8	17.4
1964	97.7	17.9
1965	123.8	20.8

Source: See Statistical Sources, infra, pp. 171ff.

Freestone Peaches

California is particularly known for its production of cling peaches--a canning crop grown and processed exclusively in this state. Freestone peaches are also grown and processed in California, but their production is shared by many other states in the nation. Michigan, Pennsylvania, and New Jersey are important geographical centers of peach growers. Georgia, the Carolinas, and Virginia in the South; Arkansas and Colorado in the Southwest; and Washington in the Pacific Northwest are also important. California, however, is the most important center for the processing of freestone peaches, while other areas in the country are essentially suppliers of most of the fresh markets for the freestone peach.[1/]

Production

There has been no dominant growth trend in the production of freestone peaches in the United States. While production has increased at various stages over the past decades and on an annual-average basis an increase of 16 percent was noted for the 1959-1963 period over the 1954-1958 five-year period, the level of production of the post World War II decade was approximately equal to the 1934-1938 production. So, it is not clear that there are any real indications of an upward trend in the experience of the last five years on a nationwide basis (Table 61; note the fluctuating figures of the last two years quoted).

California, on the other hand, shows a trend toward increased production throughout the 30 years of our study. With the exception of the bulge of the 1944-1948 period, the increases have been steady over the entire period with each five-year interval showing at least a 10 percent annual average increase over the preceding period ever since World War II.

Based on annual averages for each five-year interval, the production of freestone peaches in California has increased from 20 percent in the years before 1948 to a current average of over 25 percent of all freestone peaches grown in the United States. Even though California's share of national production has increased, however, it is certainly not a dominant factor, particularly in the fresh market as will be demonstrated.

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1/ For a special study of the freestone peach industry in California, see California Bureau of Marketing, California Freestone Peach Industry Situation, by Jed A. Adams (Sacramento, 1966), 12p.

TABLE 61

Freestone Peaches: Production, United States and California
Annual Averages, 1934-1938 to 1959-1963; Annual, 1964 and 1965

Period	Production	
	United States	California
	thousand tons	
1934-1938	954.0	177.0
1939-1943	1,106.9	241.0
1944-1948	1,305.6	287.4
1949-1953	953.5	251.0
1954-1958	978.8	278.2
1959-1963	1,138.9	309.0
1964	856.3	328.0
1965	1,020.0	290.0

Source: See Statistical Sources, infra, pp. 171ff.

Bearing Acreage

Since there are 33 other states with freestone peach acreage in the United States, it is impossible to generalize for the nation as a whole on the basis of California data as can be done for various other tree fruits. In addition, the comparison between United States and California for the prewar years is not a complete one because the United States figures are for all peaches, not just for freestones, while California figures are estimates for freestone peach acreage alone (Table 62).

Based on the annual average figures by 5-year intervals, bearing acreage of California freestone peaches has been rather remarkably stable in the last 20 years. There have been decreases since the 1930's, of course, and the general level of bearing acreage for the last 15 years is lower than for the earlier 15 years; but the constant decreases which have been characteristic for bearing acreage of other deciduous fruit in general have not been apparent in freestone peaches. There may very well be a specific explanation relating to nonbearing acreage which will be covered in the next section.

Nonbearing Acreage

If the short-run view were to be taken, it would lead to an emphasis on declining bearing acreage in freestone peaches, a decline which has been steady since 1961 when over 36,000 acres were recorded--the highest acreage figure to be noted since 1946 (Table 63). However, the short-run view is particularly irrelevant to those dealing in orchard crops.

In addition to timing, the location of the nonbearing acreage is an important factor in these days of urban sprawl. California produces freestone peaches in the Sacramento and San Joaquin valleys and in San Bernardino County. The leading counties in production are Fresno, Merced, Tulare, Stanislaus, and Solano. The striking annual average nonbearing acreage recorded in the 1954-1958 period, which represented an all-time high, was developed in large part in the counties that extend the full length of the north-south axis of the San Joaquin Valley, running from San Joaquin on the north to Kern on the south. The extent of these plantings not only brought nonbearing acreage to the high point in 1954-1958 but also produced the increases in bearing acreage noted for 1959-1963 as nonbearing acreage matured. These new plantings are no longer observed; thus, decreasing acreage can be expected and, indeed, has been recorded in most very recent single years.

TABLE 62

Freestone Peaches: Bearing Acreage, United States and California
Annual Averages, 1934-1938 to 1959-1963; Annual, 1964 and 1965

Period	Bearing acreage	
	United States a/	California
	thousand acres	
1934-1938	572.7	41.1
1939-1943	576.5	37.5
1944-1948	b/	39.7
1949-1953		32.3
1954-1958		32.2
1959-1963		35.1
1964		33.7
1965		31.7

a/ All peaches.

b/ Blanks indicate no data available.

Source: See Statistical Sources, infra, pp. 171ff.

TABLE 63

Freestone Peaches: California Nonbearing Acreage
Annual Averages, 1934-1938 to 1959-1963
Annual, 1964 and 1965

Period	Nonbearing acreage
	thousand acres
1934-1938	9.4
1939-1943	8.7
1944-1948	8.3
1949-1953	7.2
1954-1958	12.6
1959-1963	7.5
1964	2.1
1965	2.0

Source: See Statistical Sources, <u>infra</u>, pp. 171ff.

Yield

The trend developments in yield per acre for California (since the United States data are insufficient) engage attention because of the steady, although slow, upward trend over the 30 years of our investigation. Although acreage, in decline from the 1934-1938 period, held relatively steady in the recent past, yield increase was not deterred under either set of circumstances (Table 64). Notwithstanding year-to-year fluctuations, California freestone peach yield has followed a strong upward trend. This was particularly true through the mid-1940's; and it has continued, though not as sharply, up to the present time.

Sales--Total, Fresh, and Processed

The United States freestone peach crop goes mainly into fresh-market channels, which is not true of the California freestone peach production. Thus, in analyzing trends in fresh sales for the nation as a whole, it is also important to note the changing relationship to total sales. As can be seen from the five-year average in Table 65, total United States fresh sales increased absolutely through World War II, dropped, and then slowly increased again until the early 1960's. The levels reached in the 1959-1963 period showed annual average total fresh sales that were 18 percent above the total fresh sales of 1934-1938. This general increase was achieved despite two very low production years, 1950 and 1955. This increase is in contrast to other stone fruits. The relationship between fresh and total sales for the United States has been shifting in a constant direction during the five-year periods. A steadily decreasing percentage of total amount sold has gone into fresh market disposition throughout the 30 years of our survey. From a high of 82.2 percent in the 1934-1938 period, total fresh sales for the United States constituted only 72.9 percent of the total United States sales of freestone peaches in the 1959-1963 interval.

California has experienced shifts in total sales of freestone peaches in much the same pattern as those of total United States sales. However, the 1959-1963 period for California has shown new highs in total California sales of over 300,000 tons. Recent annual figures for California show the increase sustained while total United States freestone peach sales are again declining.

In fresh sales, California's peak period for freestone peaches was in 1944-1948. Since that time, there has been a fresh sales level of, very roughly, 115,000 tons annually. Processing freestone peaches (mostly canned) show the

TABLE 64

Freestone Peaches: Yield, United States and California
Annual Averages, 1934-1938 to 1959-1963; Annual, 1964 and 1965

Period	Yield	
	United States[a]	California
	tons per bearing acre	
1934-1938	1.67	4.31
1939-1943	1.93	6.43
1944-1948	b/	7.23
1949-1953		7.78
1954-1958		8.65
1959-1963		8.79
1964		9.70
1965		9.10

a/ All peaches.

b/ Blanks indicate no data available.

Source: See Statistical Sources, infra, pp. 171ff.

TABLE 65

Freestone Peaches: Total, Fresh, and Processed Sales, United States and California
Annual Averages, 1934-1938 to 1959-1963; Annual, 1964 and 1965

Period	United States			California		
	Total sales	Fresh sales	Processed sales	Total sales	Fresh sales	Processed sales
	thousand tons, fresh-weight basis					
1934-1938	809.4	665.0	144.5	187.0	55.8	131.2
1939-1943	957.6	775.0	183.2	238.8	93.7	144.7
1944-1948	1,161.9	935.4	227.5	283.4	122.7	160.6
1949-1953	857.9	675.9	182.0	249.0	112.2	136.8
1954-1958	929.5	697.5	232.1	276.7	116.7	160.0
1959-1963	1,086.2	791.7	294.5	306.6	113.8	192.8
1964	824.6	551.4	273.2	326.8	116.9	209.9
1965	924.7	653.5	271.2	289.2	108.4	180.8

Source: See Statistical Sources, <u>infra</u>, pp. 171ff.

greatest gains, and those in fact have been pronounced only in the past five or six years. A general decrease in production of freestone peaches in California and in the United States occurred in the 1949-1953 period. But the percentage of California total sales which went into processing in each five-year period was under 60 percent. However, in the five-year period of 1959-1963, California freestone peaches for processing constituted 63 percent of all California sales.

From a cursory examination of processed utilization figures of the past 10 years, which are not presented in detail here, it would seem that freestone peaches for drying have taken a relatively stable share of tonnage during the last 5 or 6 years; while canning and freezing have been the major "growth" products, with canning the main outlet for California freestone peaches.

Grower Prices

The prices that growers receive for freestone peaches in the United States and in California can be roughly compared, although the United States figures are compiled to include all peaches and California prices are exclusively freestone peaches (Table 66). This is not a serious difference, however, since California is the only state which differentiates a variety so distinctly as the clingstone peach.

United States grower prices are higher than California's throughout the 30 years quoted here, as could be expected by the slight difference in definition, but are higher by a wider margin than could be expected if this were the single explanation. United States grower prices broadly followed the general price swings for fruit prices in the earlier periods with prices lower in the depression-influenced years, higher during recovery and wartime peaks, declining thereafter, followed by the highs of the mid-1950's, lower prices under conditions of increased supply, and recent higher prices quoted annually.

California's grower prices seemed to follow the same pattern as those of the United States until the late 1950's. While United States price to freestone peach growers fell more than 7 percent between the 1954-1958 period and the 1959-1963 span, those to California growers remained almost stationary. But grower prices for the nation as a whole have somewhat better than doubled over the 30 years of the study in actual dollar terms, while those for California freestone peach growers alone have done somewhat better than that. Of course, United States price to growers was $16.10 higher (annual average,

TABLE 66

Freestone Peaches: Average Grower Prices, All Uses
United States and California
Annual Averages, 1934-1938 to 1959-1963; Annual, 1964 and 1965

Period	Grower prices	
	United States[a]	California
	dollars per ton	
1934-1938	38.08	21.98
1939-1943	55.92	40.10
1944-1948	86.17	67.72
1949-1953	78.58	63.30
1954-1958	86.17	65.74
1959-1963	80.00[b]	65.40[c]
1964	91.80[b]	61.70[d]
1965	90.80[b]	51.70[d]

a/ All peaches.

b/ Comparable freestone peach quotations per ton, now available on an official basis for the United States, are: 1959-1963--$89.00; 1964--$107.20; and 1965--$95.80.

c/ Conversion charges, as well as definition of stage at which price to grower is quoted, make this revised figure questionable in comparing trends.

d/ Packinghouse-door quotations per ton (now comparable to United States definition) of these two years are: 1964--$79.60 and 1965--$59.50.

Source: See Statistical Sources, *infra*, pp. 171ff.

five-year rate) for 1934-1938 than that paid to California growers alone; and strangely, only about $15 separated United States and California prices at the higher levels. With the recent availability of comparable figures for United States and California prices to growers for freestone peaches alone, the dollar difference is more striking. In 1964 and 1965, it has averaged over $30 per ton. This may be a reporting difference in large part, but it may be the influence of the larger percentage of the crop directed to the processing utilization in the recent past. California growers indeed may receive lower real returns than those freestone growers in other parts of the country, although we cannot at this point delineate the figures throughout to test this hypothesis further. It might be conjectured that the fact that a considerably larger proportion of United States freestone peaches goes to the fresh market (73 percent in 1959-1963) explains the widening of the margin between United States grower price and California grower price where 63 percent of all freestone peaches went into processing in the five-year period, 1959-1963.

The California price experience in the different utilizations is discussed in the next section. It is suggested here that the average price in each use has shown some relatively small declines over the past five years, none being precipitate and none showing any discernible trend for a full five-year period; yet, combined decreases have produced the figures shown in Table 66 which reflect a very small decrease in actual price between the 1954-1958 period and the 1959-1963 period, followed by serious declines in 1964 and 1965.

Price by Utilization for California

Considering the price trends for fresh and for processed California freestone peaches separately (Table 67), it is first evident that they have moved in the same direction throughout these three decades and that the pattern of movement has been parallel but not identical. It is also true that the fresh market has been the channel of higher average returns to growers throughout the recorded years of our survey. The major characteristic trend of decreasing fresh price to growers, even from the mid-1950's, has been true of grower prices for processed fruit as well.

There was a slight decrease in overall annual average grower price in California from the five-year period of 1954-1958 to 1959-1963. The processing price, however, was down by about 15 percent between those two 5-year

TABLE 67

Freestone Peaches: California Weighted-Average Grower Prices Fresh and Processed, Annual Averages, 1934-1938 to 1959-1963 Annual, 1964 and 1965

Period	Fresh	Processed
	dollars per ton, fresh-weight basis	
1934-1938	25.14	20.61
1939-1943	46.92	34.40
1944-1948	85.14	54.68
1949-1953	74.96	53.43
1954-1958	78.48	56.01
1959-1963 a/	60.42	47.50
1964	71.90	56.01
1965	66.00	43.17

a/ Recent minor revisions in seasonal prices for 1959-1963 have not been included. Their inclusion would not change five-year average by as much as 1 percent.

Source: See Statistical Sources, infra, pp. 171ff.

averages. The 1964 single-year processing price to California freestone peach growers was, coincidentally, exactly the 1954-1958 annual average price to growers for that five-year period, but the fresh price was still 8 percent below that of the 1954-1958 annual average price; 1965 annual prices were much lower.

However, grower price for processed freestone peaches has differed in two major ways from that of grower price in the California fresh market: (1) the 1954-1958 annual average price was higher than that of 10 years before, and (2) shifts in price over the 30 years are smaller in dimension; increases and decreases are all within a rather narrow range; and price shifts during the 20 years since World War II have been within 1 percent of the mean price for the period as a whole.

Keeping in mind the general price level increases over the last 20 years, it is clear that in neither fresh nor processed freestone peaches have growers been able to make the gains attributable to food in general, nor to fruits in particular, nor to apples and pears specifically. In fact, the price declines in the last five-year period (1959-1963) were not a minor matter. Even with the difficulties of comparable price reporting for long-run trend purposes, it is clear that price to growers of freestone peaches seems not to be indicative of the anticipated results of domestic prosperity.

Per Capita Disappearance--Total, Fresh, and Processed

As in some other fruit consumption tables offered in this study, total consumption of freestone peaches cannot be gauged accurately on a combined fresh-weight basis without a great deal of detailed estimating that might defeat the purpose of presenting it here. Therefore, the per capita consumption tables are offered in three parts--fresh, in pounds of fresh-weight peaches; canned, in pounds of product weight; and dried, in pounds of product weight (Table 68). A suggested rough conversion factor quotes 1.022 pounds farm weight from pounds canned and the use of a factor from 5.55 through 6.48 for conversion to farm weight from packed processed weight for freestone peaches. The range in dried freestone depends on the variety of freestone peach--Elberta or other.

With that in mind, it should be noted particularly that freestone peaches, while decreasing in fresh per capita consumption since the World War II years, did show an increase, however small, during the past 10 years with 8.8 pounds

TABLE 68

Freestone Peaches: United States Per Capita Disappearance
Annual Averages, 1934-1938 to 1959-1963; Annual, 1964 and 1965

Period	Fresh	Processed	
		Canned	Dried
	pounds per capita	pounds per capita, product weight	
1934-1938	12.5	.3	.3
1939-1943	13.8	.9	.2
1944-1948	15.6	1.1	.2
1949-1953	9.9	1.3	.1
1954-1958	8.78	1.8	.08
1959-1963	8.79	2.3	.06
1964	5.97	1.91	.05
1965	6.94	.98	.04

Source: See Statistical Sources, infra, pp. 171ff.

per capita consumed in the 1954-1958 period and 8.85 pounds per capita in the 1959-1963 years. To be sure, the 1964 figure is a sharp decrease; but that may well be the fluctuation characteristic of a single year, while the other figures are annual averages for a five-year span.

The important upward trend noted in canned freestone peaches is very apparent. Although leveling off in the decade from 1944 to 1954, the increases in per capita consumption of the canned freestones have returned to over 25 percent gains in more recent years. The 1964 and 1965 decreases, however, must be noted.

Dried peaches, as has been true of other dried fruits, have decreased steadily in per capita consumption throughout the 30 years of this study. There was a leveling off from 1939 through 1948, but since then the decreases have been continuous.

United States Exports--Fresh and Other

Exports of fresh peaches, almost all of which are freestone peaches, were steadily over 4,000 tons in the prewar period and almost doubled that during the war. In the postwar 1949-1953 period, there was a decrease to 6,500 tons; but thereafter, fresh peaches have been exported by the United States in steadily greater quantity. As with most other fresh deciduous fruit, the bulk of the United States exports goes to Canada. A small fraction is shipped to Mexico. Although the total fresh exports are relatively small in absolute numbers, they represent an increasing percentage of total fresh sales--over 2 percent in the 1959-1963 period (Table 69).

Although canned peaches are a very important export crop for the United States and peaches also constitute an important part of fruit cocktail, both of these are cling peaches rather than freestone peaches. The export of both canned freestone peaches (which are not noted separately) and dried peaches (most of which are freestones) are too small to be recorded in detail for this overall study.

TABLE 69

Freestone Peaches: United States Fresh Exports[a/]
Annual Averages, 1934-1938 to 1959-1963; Annual, 1964 and 1965

Period	Fresh exports	Fresh export as percent of total fresh sales
	thousand tons	percent
1934-1938	4.9	.7
1939-1943	4.1	.5
1944-1948	8.0	.9
1949-1953	6.5	1.0
1954-1958	11.0	1.6
1959-1963	17.4	2.2
1964	9.0	1.5
1965	17.4	2.7

a/ All peaches; however, almost all are freestone peaches.

Source: See Statistical Sources, infra, pp. 171ff.

Pears

The commercial growing of pears is concentrated on the West Coast. California leads in production, with Washington and Oregon producing roughly similar tonnage which, combined, does not quite equal California's production. However, varietal differences in pears differentiate the West Coast production, so that Oregon with a substantial production of "late" pears is engaged in a different segment of the industry from Washington and California whose Bartletts (the major crop) go to fresh shipment and canning.

Several states in the Southwest grow pears commercially in limited tonnage; but Michigan, outside the Pacific Coast, is an important factor in pear production with a tonnage of over 45,000--something under 6 percent of the United States total production of pears.

Production

In speaking of commercial pear production in this study, we shall regard the combination of all pear varieties as a total figure. California's production--approximately 90 percent Bartletts--is roughly one-half of all production of pears in the United States.

Total pear production for the United States as a whole has fashioned a pattern of its own for the 30 years of our study not quite similar to any other deciduous fruit. Pears were produced in almost steady amounts of slightly over 680,000 tons for the decade 1934-1943. The characteristic increases of 1944-1948 were followed by fluctuations downward through the next decade. However, 1959-1963 marked strong declines in pear production. This is almost literally a play on words since it was approximately 1959 that marked the beginning of a pear virus known as the "pear decline" in California, which has accounted for much of the reduction in California's pear production, bringing, in turn, decreases in the United States total. Some recent recoveries represent a control of this disease and returns to earlier production potential for pears.[1/]

California shows a different pattern of longer term trends. From Table 70 it is clear that up until the most recent years California's pear production

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1/ For an extensive background, interpretation of trends, and statistical supplement for the California industry, see Foytik, California Pear Industry: Economic Situation, 1961, University of California, Giannini Foundation Research Report No. 249 (Berkeley, 1962), 110p. The study was initiated to examine probable effects of the pear decline disease.

TABLE 70

Pears: Production, United States and California
Annual Averages, 1934-1938 to 1959-1963; Annual, 1964 and 1965

Period	Production	
	United States	California
	thousand tons	
1934-1938	682.9	230.2
1939-1943	683.9	247.4
1944-1948	749.1	300.4
1949-1953	698.4	341.8
1954-1958	717.5	387.8
1959-1963	637.6	335.6
1964	728.5	395.0
1965	499.4	204.0

Source: See Statistical Sources, <u>infra</u>, pp. 171ff.

showed a steady upward trend, somewhat sharper in the postwar period than the prewar period. During these years, therefore, California was growing a steadily larger percentage of the nation's pears. In the earlier years, California pears were under 40 percent of total United States pear production; in the recent years, California pears are over 50 percent of the nation's total. The fact that the most recent five-year period, 1959-1963, shows the United States total production to be 8 percent below that of 30 years earlier (in large part because of the special disease conditions), emphasizes California's position in the industry. California's pears, which were the ones mainly affected by the disease, were still, despite decreases, 14.6 percent above the 230,000 tons grown in 1934-1938. Pear decline and the short crop year of 1963 (due to peculiarly cold, damp weather during blossom period) were both experienced in the 1959-1963 five-year average period; but the production potential is illustrated again by the figure for the single year of 1964, even though 1965 was once more a dramatic decrease.[1/]

Bearing Acreage

In bearing acreage the pattern for pear acreage is similar to that of other deciduous fruits. With only California figures illustrated here over the full 30 years, the decreases are rapid in the earlier years and less rapid but still trending downward in the more recent years.

California grows pears in six major areas of the state--the North Coast (Lake and Mendocino counties), the Sacramento Valley (Sacramento, Yolo, Sutter, Butte, and Glenn counties), Santa Clara Valley (Santa Clara, San Benito, Santa Cruz counties), northern Bay area (Solano, Sonoma, Contra Costa, Napa counties), Sierra foothills (Placer, El Dorado, Nevada counties), and northern San Joaquin Valley (San Joaquin and Stanislaus counties). Additional small amounts are grown in southern California. Despite the extensive area in which pears are produced, total bearing acreage is declining (Table 71).

Nonbearing Acreage

After observing the location of bearing acreage for pears in California, it is interesting to relate the location of the major areas of nonbearing acreage to the overall picture.

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1/ For a summary discussion of the California pear industry, see California Bureau of Marketing, The California Pear Industry, by Richard E. Gassman (Sacramento, 1966), 24p.

TABLE 71

Pears: Bearing Acreage, United States and California
Annual Averages, 1934-1938 to 1959-1963; Annual, 1964 and 1965

Period	Bearing acreage	
	United States	California
	thousand acres	
1934-1938	212.1	55.4
1939-1943	181.6	45.2
1944-1948	a/	43.7
1949-1953		39.8
1954-1958		38.7
1959-1963		35.0
1964		33.9
1965		35.1

a/ Blanks indicate no data available.

Source: See Statistical Sources, infra, pp. 171ff.

As Table 72 of the five-year averages suggests, nonbearing acreage in pears more than doubled from the 1954-1958 period to the 1959-1963 span. Nonbearing acreage of pears after decreases, on the average, from 1934 through 1948 steadily increased thereafter and most strikingly in the most recent past. Each area of those listed under bearing acreage locations showed increase in nonbearing acreage with the exception of the Sierra foothill counties. The largest nonbearing acreage is in the North Coast counties (currently over 4,000 acres), but other areas show steady increases in nonbearing acreage. Lake County, now second in bearing acreage totals, has the largest nonbearing acreage; while Sacramento, with most bearing acreage, is below Mendocino County in nonbearing acres.

Thus, shifts in pear production must be taking place as acreage matures to bearing age. Nonbearing acreage increases, while not maintaining the stability of bearing acreage, rather are stemming the bearing acreage decreases which clearly would be precipitous otherwise. By far the largest percentage of nonbearing acreage is in Bartlett pears as is 90 percent of all California bearing acreage.

Yield

The early indications that California yield was higher than United States yield per acre cannot be tested currently, but the tabulation clearly indicates that up until the 1959-1963 period yield continued to increase in California. Since bearing acreage trended downward throughout, the increased production and, therefore, yield, was the more impressive. Even the decreased yield in the 1959-1963 annual average was more than double the yield figure of 1934-1938; indications are that the most recent years have yielded new highs in pears harvested per acre.

In a California state study done to determine demand for California fresh Bartlett pears, a very high-weighted average yield figure was developed for 1964 and used for computation.[1/] The year 1964 was selected to represent the most recent year of normal production and, therefore, it was assumed to reflect the industry's productive capacity. Then the average yields per acre of the

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1/ California Bureau of Marketing, Market Analysis of California Fresh Bartlett Pears, Marketing Report No. 21, prepared by Richard E. Gassman (Sacramento, 1966), 42p.

TABLE 72

Pears: California Nonbearing Acreage
Annual Averages, 1934-1938 to 1959-1963
Annual, 1964 and 1965

Period	Nonbearing acreage
	thousand acres
1934-1938	6.5
1939-1943	3.2
1944-1948	2.2
1949-1953	3.8
1954-1958	5.4
1959-1963	11.6
1964	12.1
1965	19.6

Source: See Statistical Sources, infra, pp. 171ff.

eight leading Bartlett pear-producing counties in California were obtained. Based on a weighted average of these yields, the study quoted 14 tons per acre as the computed figure. Whether this high a yield is more representative of the future pear production in California than the ones given in Table 73 quoted here remains to be seen.

Sales--Total, Fresh, and Processed

The United States total sales of all pears, following production patterns already discussed, are unable to show any well-developed trends throughout the 30 years under inspection. Although the 1964 figure, quoted separately, shows strong increases (so that recovery might eventually be made on the average despite pear decline), it is still too early to make definitive generalizations to the effect that total production of pears will return to either wartime levels or to those of the middle 1950's.

On the other hand, it is very apparent that there is a downward trend in fresh sales for all United States pears (Table 74). With the exception of an increase of nearly 10 percent over the previous period in 1944-1948, there has been a steady decrease from 1934-1938 until the present time. It was particularly sharp in the very recent past when it was reinforced by the short crop years. In addition, the relationship of fresh sales to total sales has exhibited a steady downward trend. In 1934-1938 fresh sales were 67.5 percent of all sales; by 1959-1963 they were below 40 percent. In this way, it is even more apparent that pears, a primary deciduous fruit over the years, has also been a leader in the notable trend away from fresh fruit per capita consumption as processing of all types has gained ascendancy.

Sales of United States pears for processing have risen steadily in volume over the years of our survey period until 1959-1963 when the tonnage figure was clearly influenced by the pear-decline years. As we have noted, processing percentage of total sales has also risen throughout the years with no exceptions.

In California, the pattern of sales does not parallel the United States total sales. Total California sales of pears increased in volume steadily throughout the years shown until the recent 1959-1963 period of pear decline. The shift of production over the years to California (as well as the Northwest) is evident in the fact that California total sales were about 38 percent of United States total sales of pears in 1934-1938, and 20 years later they were over 50 percent.

TABLE 73

Pears: Yield, United States and California
Annual Averages, 1934-1938 to 1959-1963; Annual, 1964 and 1965

Period	Yield	
	United States	California
	tons per bearing acre	
1934-1938	3.25	4.16
1939-1943	3.77	5.47
1944-1948	a/	6.87
1949-1953		8.58
1954-1958		10.03
1959-1963		9.59
1964		11.60
1965		5.80

a/ Blanks indicate no data available.

Source: See Statistical Sources, infra, pp. 171ff.

TABLE 74

Pears: Total, Fresh, and Processed Sales, United States and California
Annual Averages, 1934-1938 to 1959-1963; Annual, 1964 and 1965

Period	United States			California		
	Total sales	Fresh sales	Processed sales	Total sales	Fresh sales	Processed sales
	thousand tons, fresh-weight basis					
1934-1938	586.0	395.8	190.2	221.04	123.3	97.7
1939-1943	601.2	352.3	248.9	241.9	99.9	140.8
1944-1948	680.9	387.0	293.9	296.9	113.3	183.2
1949-1953	641.4	294.3	347.1	335.0	106.6	228.4
1954-1958	690.2	290.1	400.1	383.6	101.8	281.9
1959-1963	623.6	248.8	374.8	334.6	78.5	256.1
1964	712.1	252.4	459.7	394.0	75.0	320.6
1965	490.0	198.1	291.8	203.4	31.6	171.8

Source: See Statistical Sources, infra, pp. 171ff.

In fresh sales, California does not parallel the national pattern either. The only pattern that cen be derived for California fresh sales of pears is one of variation and fluctuation with no particular trend. While national fresh sales decreased steadily, California's decreased, increased, leveled, and then established a new low in 1959-1963. The recent single-year figures are also very low. The relationship between California fresh sales and total fresh sales, however, has been a good deal more stable. Although for the decade between 1949-1958 California sold over 35 percent of all United States fresh pears, during all the rest of the years (measured on an annual average rate by five-year periods), California was selling about 30 percent of all United States fresh pears.

In processing, California sales showed steady, increased volume until the 1959-1963 period. It becomes clear once more that California's increased production of pears has gone in large part into increased processing of pears--mainly canning, the major processed outlet. In fact, canning is the most important California channel of utilization for pears, taking approximately 75 percent of total California production.

Nearly all of California pears for canning are of the Bartlett variety, although Hardys are also canned in small volume. Pears are an important ingredient of fruit cocktail and fruit salad as well as being an established single canned fruit. Dried pears, the other processed product, have had a fluctuating annual importance in tonnage terms. Bartletts alone are the variety of pear used for drying, varying in a range around 5½ to 1, fresh weight to dried ratio. On a fresh-weight basis, pears for drying have averaged very close to 2.5 percent of all pear sales in California for the past 20 years.

Grower Prices--United States and California

It is in the series related to grower prices that the closest parallel between California and United States figures are found (Table 75). Although California's price to growers runs just slightly below the United States average,[1/] the margin of difference has decreased until in 1954-1958 the United States and California price to growers differed only slightly over 50 cents, and in 1959-1963 the positions were reversed. California price to growers was

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1/ Supra, pp. 30 and 33.

TABLE 75

Pears: Average Grower Prices, All Uses, United States and California Annual Averages, 1934-1938 to 1959-1963; Annual, 1964 and 1965

Period	Grower prices	
	United States	California
	dollars per ton	
1934-1938	30.50	26.38
1939-1943	53.50	47.06
1944-1948	94.58	90.28
1949-1953	67.42	64.54
1954-1958	75.67	75.14
1959-1963	86.40	90.02
1964	92.50	88.10 a/
1965	132.00	134.00 a/

a/ Prices per ton now officially quoted on packinghouse-door basis in California (and, therefore, comparable to United States estimates) are: 1964--$132 and 1965--$146.

Source: See Statistical Sources, infra, pp. 171ff.

quoted at a figure $4.00 per ton higher than that for the United States as a whole. The prices in both United States and California terms have, of course, risen throughout the 30 years as the price level has risen. It has been suggested that pears and freestone peaches are closely parallel in cultivation, production, and utilization; and it is further noted that pears have rather consistently brought better prices to growers than have freestone peaches.

California Price--Fresh and Processed

When fresh and processed prices are separated for pears, the first apparent generalization is that the fresh price, as anticipated, is higher throughout the 30 years. The single years, 1964 and 1965, seem to be exceptions to this experience and show a processed price to growers higher than that for fresh pears. In large part, this was the result of the canning price of pears.

For the five-year periods, however, the annual average price to growers for processed pears ranged from $5 to $10 per ton lower than the fresh price. Price level increases are, of course, dominant; but the prevailing pattern for pears of the first 20 years of our survey (1934 through 1953) seems very similar to that of freestone peaches and grapes in which a peak price was attained in the 1944-1948 period with a substantial decline thereafter. In pears, the price decreases were felt in both fresh and processed uses with approximately equal impact (Table 76). In freestone peaches, however, fresh price continued to decline, whereas fresh pears showed a price recovery to the 1944-1948 heights--in fact, a bit higher. This still represents, of course, a decrease in real terms and indicates that fresh freestone peach growers and pear growers seem not to have been able to maintain their earlier position of extensive economic gains.

Price to growers of processing pears showed increases in the 1959-1963 period which were not true of freestone peaches. Observation of the uptrend of processed price indicates that quoted prices in dollar terms had not returned to the 1944-1948 peak prices until after 1963.

Since it is suggested, however, that cultural and production costs are very similar for the two fruits, it is quite possible that actual dollar returns per ton of fruit to California pear growers, in general, in both fresh and processed usage since World War II have been greater than those experienced by freestone peach growers. We have already indicated that returns per bearing

TABLE 76

Pears: California Weighted-Average Grower Prices, Fresh and Processed Annual Averages, 1934-1938 to 1959-1963; Annual, 1964 and 1965

Period	Fresh	Processed
	dollars per ton, fresh-weight basis	
1934-1938	28.52	23.92
1939-1943	53.20	43.10
1944-1948	94.86	86.39
1949-1953	71.36	61.46
1954-1958	82.62	72.57
1959-1963[a/]	95.60	83.70
1964	87.80	88.19
1965	137.00	147.77

a/ Recent minor revisions in seasonal prices for 1959-1963 have not been included. Their inclusion would not change five-year average by as much as 1 percent.

Source: See Statistical Sources, infra, pp. 171ff.

acre are very much higher for pear growers than for those growing freestone peach varieties.[1/]

Per Capita Disappearance--Total, Fresh, and Processed

Since pears, like apples, are a major crop of long standing, actively traded abroad, their worldwide acceptance as a food seems established. Since there is a need for very complete data on this fruit, more detailed statistics over a longer period of time have been maintained. It is possible, therefore, on a comparatively firm basis, to offer fresh-weight-equivalent figures covering most of the 30 years we are surveying.

From our Table 77 it will be reemphasized that total per capita consumption has decreased substantially over the three decades. Both the first and last of the periods quoted in the total per capita disappearance column are four-year annual averages (five-year data not being available), and there has been close to a 25-percent decrease since the 1935-1938 years. Once more it becomes clear, in the case of pears at any rate, that the increases in per capita consumption of processed fruit do not and have not compensated for the stronger decreases in fresh fruit consumption, at least in volume terms. Fresh pear per capita consumption has fallen from 6.4 pounds per person per year (four-year period annual average) in the late 1930's to 2.6 pounds in the early 1960's. Although able to maintain approximate stability through 1948 while processed consumption was slightly increasing, later fresh-consumption declines have been precipitous, while processed pear consumption slowly and steadily increases.

Exports

In following the trends in fresh pear exports, the most striking fact is extreme variation. First, it is perfectly clear that the United States export level of the pre-World War II years has never been regained. In the 1934-1938 period, not only was an annual average of 6,100 tons shipped from this country, but this constituted 17 percent of all fresh pear commercial production. The postwar recovery did not continue, and the 1949-1953 level of fresh pear exports was slightly less than the wartime exports, although this volume constituted a somewhat higher proportion of total United States fresh pear sales. In the

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1/ Supra, Table 17, p. 39.

TABLE 77

Pears: United States Per Capita Disappearance
Annual Averages, 1934-1938 to 1959-1963; Annual, 1964 and 1965

Period	Total	Fresh	Processed
	pounds per capita, fresh-weight equivalent		
1934-1938	8.0 a/	6.4	1.8
1939-1943	8.6	6.4	2.2
1944-1948	8.4	6.3	2.1
1949-1953	7.0	4.4	2.6
1954-1958	6.6	3.6	3.0
1959-1963	6.1 a/	2.6	3.3
1964	b/	2.4	c/
1965		1.8	

a/ Four-year average not five.

b/ Blanks indicate no data available.

c/ Canned, product weight: 1964--1.6 and 1965--1.9. Dried, product weight: 1964 and 1965--.01.

Source: See Statistical Sources, infra, pp. 171ff.

years since 1953, however, fresh pears have again risen in export volume and in percentage of fresh sales (Table 78).

Pears are grown in many countries; thus, separate regions are more inclined to be self-sustaining in apples and pears than in other deciduous fruits. Yet, they are universally traded as well. The major pear producers in Europe--especially in Italy--are currently supplying the other EEC countries where formerly the United States had some additional markets. The United Kingdom, a large importer of United States fresh pears in earlier years, is now supplied in large part from the Commonwealth countries of South Africa and Australia. Sweden and the United Kingdom are currently of about equal importance as importers of United States fresh pears. Canada continues to be the largest and most stable market for United States fresh pear exports.

In canned pears, Canada is the primary market for United States exporters at present. And, as has been mentioned, pears are an important ingredient in fruit cocktail, which is exported to Europe and the United Kingdom in substantial quantities. But with the strong competition of Australia and South Africa in the United Kingdom market, that country no longer is the leading importer of United States canned pears; nor can the United States canner count extensively on the West German market as the EEC policies are more firmly drawn to encourage member status. Even Canada currently imports (1963-1965) a larger total volume of canned pears from Australia than from the United States.

TABLE 78

Pears: United States Fresh Exports
Annual Averages, 1934-1938 to 1959-1963; Annual, 1964 and 1965

Period	Fresh exports	
	thousand tons	percent of fresh sales
1934-1938	67.1	17.0
1939-1943	16.6	4.7
1944-1948	25.0	6.5
1949-1953	16.3	5.5
1954-1958	25.5	8.8
1959-1963	31.4	13.0
1964	28.3	11.7
1965	32.8	16.5

Source: See Statistical Sources, infra, pp. 171ff.

Plums

Plums are a deciduous fruit used mainly in fresh form. There is some canning of plums, but the major sales are in the fresh market. In this definition, which is the one used in the trade by grower and processor alike, plum specifies a variety grown primarily for uses other than drying to distinguish the fruit from the prune.[1/] Fresh prunes, grown extensively in the Pacific Northwest, are still a different product and are also named, possibly more appropriately, "purple plum" but are not the fruit or product that will be referred to generally in this section of our study.

Production

California is the leading plum-producing state.[2/] As a matter of record, by this definition, Michigan is the only other state producing plums commercially. It is, therefore, a specialty crop of a very specific region, use, and season. Often each variety of the plum is marketed for less than a month during the average year of production. Staggered in this fashion, various plum varieties are marketed from May through September of a normal year as each variety is available. It is not surprising, therefore, that United States production levels have been relatively stable over the period of our investigation with small gains shown in volume from 1934 through 1944, almost level production (around 86,000 tons annually) from 1945 through 1958, but with interesting increases of nearly 15 percent shown during the last five or six years (Table 79).

Since, by definition, California grows nearly all the plums defined in this section, the California and the United States production patterns are almost coterminous. It is also difficult to define specific trends because changes in trend often are changes in definition of product when traced to their source.[3/]

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1/ By industry usage, the "plum" is soft-fleshed; the "prune" is firm-fleshed and can be dried whole without fermenting.

2/ For a full discussion of the industry, see Foytik, California Plum Industry: Trends and Outlook, California Agricultural Extension Service Circular 493 (Berkeley, 1961), 34p.

3/ Pubols, "Trends in the Plum and Prune Industry," Fruit Situation, U. S. Economic Research Service, TFS-155, June, 1965, pp. 20-25 and related tables, pp. 26-31. Current U. S. Department of Agriculture figures separate California plums from all other regions for data compilation.

TABLE 79

Plums: Production, United States and California
Annual Averages, 1934-1938 to 1959-1963; Annual, 1964 and 1965

Period	Production	
	United States	California
	thousand tons	
1934-1938	65.1	60.6
1939-1943	76.4	71.8
1944-1948	85.2	80.8
1949-1953	86.8	80.2
1954-1958	86.1	79.8
1959-1963	97.7	90.4
1964	127.5	111.0
1965	125.3 a/	113.0

a/ Estimate based on addition of production of California fresh plums to that of Michigan, Idaho, Washington, and Oregon, which includes prunes.

Source: See Statistical Sources, infra, pp. 171ff.

Bearing Acreage

Indications from the earlier years (and because of California's almost exclusive position in plums) show bearing acreage in the United States only a few thousand acres above that of California. California figures, which are all we have for the last two decades, indicate that bearing acreage has been relatively stable since the 1930's (Table 80). In addition, commercial production was actually confined to a few specialized growing areas in California--the south San Joaquin Valley, the Placer foothill area, and the Sacramento Valley area. Tulare, Fresno, and Kern are the major counties together with San Joaquin itself. Placer County has been declining in acreage and shipping importance. Apparently, yield has been better in the Valley counties, and varieties have been developed to take advantage of the special conditions there.

Nonbearing Acreage

The increases in nonbearing acreage, which have been characteristic of the past 10 years, have brought the acreage available for future bearing to a point above the previous highs in the 1944-1948 period. The annual high point in nonbearing acreage was actually reached in 1959 when there were over 7,500 acres in this category (Table 81). Much of this acreage was found in Fresno and Tulare counties, while Placer County was adding very little. This trend has meant the shift in the 1960's to the south San Joaquin where continuing increases in production now mean that this section produces most of the shipments of this specialty crop. Sutter County has increased its importance during the same period. The varietal composition of the new acreage has also changed; and the complex combinations of changes, while interesting in a detailed study of this one industry alone, are too various to be outlined here.[1/]

Yield

The yield experience for plums--all fresh varieties combined--has been interesting in that the increases noted over the years of the study have in this case been coupled with almost stable acreage rather than steadily decreasing acreage as in other deciduous fruits. Therefore, despite acreage shifts,

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1/ See California Bureau of Marketing, A Look at the California Plum Industry, by Emil M. Loe (Sacramento, 1966), 10p.

TABLE 80

Plums: Bearing Acreage, United States and California
Annual Averages, 1934-1938 to 1959-1963; Annual, 1964 and 1965

Period	Bearing acreage	
	United States	California
	thousand acres	
1934-1938	29.4	25.7
1939-1943	24.9	22.0
1944-1948	a/	23.5
1949-1953		23.3
1954-1958		21.6
1959-1963		22.9
1964		25.5
1965		25.4

a/ Blanks indicate no data available.

Source: See Statistical Sources, infra, pp. 171ff.

TABLE 81

Plums: California Nonbearing Acreage
Annual Averages, 1934-1938 to 1959-1963
Annual, 1964 and 1965

Period	Nonbearing acreage
	thousand acres
1934-1938	3.9
1939-1943	3.7
1944-1948	5.7
1949-1953	3.7
1954-1958	5.4
1959-1963	6.1
1964	5.2
1965	3.5

Source: See Statistical Sources, infra, pp. 171ff.

nonbearing acreage increases, varietal changes, and special combinations of seasonal availability, it is the more striking that the overall stability of the plum production, acreage, and yield, taken as a whole, should be the major generalization of this experience of 30 years (Table 82). This is not to say that there have been no increases in yield; there have been. Yet, the decade of 1944-1954 experienced the same overall annual average yield throughout. There has been an increase of nearly 15 percent since then, to a point where bearing acreage is currently yielding over four tons of plums per acre. This yield increase is not as striking from a comparative point of view as other stone fruits have exhibited, even though it represents over 66 percent higher yield in this 1959-1963 period than there was in the 1934-1938 five-year span.

Sales: Total, Fresh, and Processed--United States and California

As has been indicated earlier, the fresh market is the main utilization of the plums with which we are dealing in this section. Just as increases in production were experienced from 1934 through 1948, so fresh sales increased. In a sense, this could be assumed by the definition of the fruit. However, in the 1944-1948 period, it will be noted that 5,700 tons went to processing (7 percent of the total sales); until that time, 96 percent of the sales had been in fresh-market channels. Upon investigation, we learn that during the war plums went in these relatively large quantities into crushing. The crushed pulp was held at very low temperatures or in a frozen state (this technique having become commercially available) and then used for jams, jellies, and preserves. Although tonnage going into canning increased also during this time, it was rather the crushing than the canning that had the dominant impact on processed sales. It was clear that military purchases for spreads for bread were the most important reason for the crushed sales, although this was also clearly implemented by the technological innovation of freezing as a preserving process (Table 83).

In the 1959-1963 period, an increase of over 50 percent took place in United States processed sales; this compares with an increase of 14 percent in total sales and 11 percent in fresh sales. From previous experience, it could be assumed, and from California detailed figures it is almost certain (since the the United States figures include California), that the sizable increase in processing sales is once more in crushing rather than canning sales.

In the more recent years in which the data separation is made between California plums and those plums and prunes grown in Michigan, Idaho, and the

TABLE 82

Plums: Yield, United States and California
Annual Averages, 1934-1938 to 1959-1963; Annual, 1964 and 1965

Period	Yield	
	United States	California
	tons per bearing acre	
1934-1938	2.22	2.36
1939-1943	3.08	3.26
1944-1948	a/	3.44
1949-1953		3.44
1954-1958		3.69
1959-1963		3.94
1964		4.60
1965		4.40

a/ Blanks indicate no data available.

Source: See Statistical Sources, infra, pp. 171ff.

TABLE 83

Plums: Total, Fresh, and Processed Sales, United States and California Annual Averages, 1934-1938 to 1959-1963; Annual, 1964 and 1965

Period	United States			California		
	Total sales	Fresh sales	Processed sales	Total sales	Fresh sales	Processed sales
	thousand tons, fresh-weight basis					
1934-1938	64.2	62.1	2.1	60.3	58.5	1.8
1939-1943	71.1	68.4	2.7	66.9	64.4	1.4
1944-1948	83.9	78.2	5.7	79.9	74.7	2.8
1949-1953	81.4	78.0	3.4	75.4	73.4	2.1
1954-1958	82.8	76.9	6.0	76.9	73.7	3.2
1959-1963	94.5	85.3	9.3	87.4	82.4	5.0
1964	122.1	109.1	13.0	109.1	105.0	5.8
1965	a/			107.8	102.4	5.1

a/ Blanks indicate data no longer available on a comparable basis; estimate based on addition of production of California fresh plums to that of Michigan, Idaho, Washington, and Oregon, which includes prunes. United States figures other than California on a revised-definition basis are shown below. Processed estimates adjusted to differing fresh-weight equivalent ratios in each area.

Period	Total	Fresh	Processed
	thousand tons		
1959-1963	66.7	34.2	32.5
1964	69.4	35.5	33.9
1965	71.0	34.8	36.2

Source: See Statistical Sources, infra, pp. 171ff.

Pacific Northwest, the increases in total, fresh, and processed sales can be more clearly differentiated. United States plum sales from other regions are divided between fresh and processed quite equally. California prunes, of course, are treated as a different product and so the canning utilization of plums can be clearly demonstrated as a small but increasing percentage of total sales.

Grower Prices--United States and California

Plum growers found the prices they received for their fresh crop increasing over the first 25 years of the 30 years we are observing here, but possibly by less than the increase in the price level. In the 1959-1963 period, however, the price to growers fell by about 3 percent for the United States as a whole. Since this was also a period of generally rising prices, it is clear that plum growers were additionally disadvantaged in this period. Further, the single year's figure for 1964 represented another decrease--this time of 16 percent. Clearly, growers of fresh plums are in a very difficult price position (Table 84).

California growers who, after all, make up the largest segment of growers in the United States, are in a similarly difficult pricing situation. Again remembering the difference in measuring price, as outlined previously, California prices have shown a persistent figure below United States prices, which have widened in absolute dollars and cents over time but have stayed approximately 20 percent lower than United States grower prices throughout. Nonetheless, the decrease in grower prices in California experienced in 1959-1963 was nearly 5 percent, and the additional drop for the single year of 1964 was over 20 percent. There is absolutely no question, therefore, that plums for fresh market have not been a high-return crop in California for some time. The very sizable increases in production of the last few years have also been matched by sizable increases in what is termed "wasted" by the California Crop and Livestock Reporting Service. It is also clear that large amounts of the total plum production going into the crushing channels, an important development of the past few years, have also had a depressing effect on price since crushing is a low-return "surplus" operation and, thus, the average price which covers all outlets is strongly affected. Figures show, however, that the grower's price for fresh market alone also has been falling (on an average annual rate measured by five-year periods) in recent years.

TABLE 84

Plums: Average Grower Prices, All Uses, United States and California
Annual Averages, 1934-1938 to 1959-1963; Annual, 1964 and 1965

Period	Grower prices	
	United States	California
	dollars per ton	
1934-1938	46.12	35.28
1939-1943	83.72	70.06
1944-1948	138.00	109.74
1949-1953	159.80	131.82
1954-1958	173.80	141.60
1959-1963	168.40	134.80
1964	141.00	106.00
1965	a/	96.80

a/ No data available on comparable basis.

Source: See Statistical Sources, infra, pp. 171ff.

Price to California Growers by Utilization

The very great disparity between price to growers for fresh plums and price for processed plums is immediately apparent (Table 85). In addition, the different movement of prices over the 30-year span is most interesting. Fresh prices of plums rose throughout the years up until the late 1950's, after which they turned downward at a slower rate (omitting the single year example of 1964). Price for processed utilization, however, rose to the peak annual average rate in the 1944-1948 period, as was characteristic of freestone peaches and pears, and decreased steadily since (again omitting the single year example of 1964).

Even at peak prices, processing plums have never been above 50 percent of the price to growers of fresh plums. In the most recent five-year period, fresh plums were quoted at an annual average price to growers seven times that of the processed price. Clearly, processing is a salvage operation in California.

Per Capita Disappearance

Because of the categorization of the plum industry (a fresh fruit commodity) as separate from the prune industry (a dried fruit specialty), the assessment of per capita disappearance of either or both from available statistics is a bit more difficult. In the initial table available (Table 86), all figures have been estimated on a fresh-weight-equivalent basis and, therefore, total, fresh, and processed can be covered for the 30 years of our survey. It is clear, however, that this series includes the full plum-prune industry, while we have been covering the more limited segment (i.e., plums as a fresh commodity).

Based on the plum-prune figures, it is quickly observed that total per capita consumption has declined by nearly 50 percent over the 30 years of our survey (this figure, of course, is exaggerated by the declines in per capita consumption of dried prunes). However, the fresh disappearance per capita does refer directly to the segment of the industry with which we have concerned ourselves here (fresh plums, although prunes used fresh are included under fresh per capita consumption); and clearly, fresh per capita consumption has also decreased very close to 50 percent in the same period of time. This decrease has been steadily in evidence since the World War II period.

If we readjust the processed category quoted above to include canned consumption alone (canned plums are, in large part, the product of the segment of the industry we are covering), we will see the results in Table 87.

TABLE 85

Plums: California Weighted-Average Grower Prices, Fresh and Processed Annual Averages, 1934-1938 to 1959-1963; Annual, 1964 and 1965

Period	Fresh	Processed
	dollars per ton, fresh-weight basis	
1934-1938	35.62	27.00
1939-1943	73.04	39.83
1944-1948	114.06	57.02
1949-1953	134.22	45.30
1954-1958	146.80	31.22
1959-1963 a/	141.80	20.24
1964 b/	111.00	24.93
1965 b/	101.00	23.02

a/ Recent minor revisions in seasonal prices for 1959-1963 have not been included. Their inclusion would not change five-year average by as much as 1 percent.

b/ Price reporting for plums has become complicated not only by the definition of product but, in addition, by different stages in the marketing prices being reported. Thus, 1964 and 1965 are more fully reported in revised figures in this fashion:

	1964	1965
	dollars per ton, fresh-weight basis	
Equivalent processing plant-door returns		
All processed	26.90	23.00
Equivalent first delivery point		
All sales	107.00	97.00
Fresh	111.00	101.00
Equivalent on-tree returns		
All sales	77.00	67.30
Fresh	81.00	71.00
Processed		
Canned	11.20	17.00
Frozen	3.30	- 6.00

Source: See Statistical Sources, <u>infra</u>, pp. 171ff.

TABLE 86

Plums: United States Per Capita Disappearance--Fresh and Processed
Annual Averages, 1934-1938 to 1959-1963; Annual, 1964 and 1965

Period	Total[a/]	Fresh	Processed
	pounds per capita, fresh-weight equivalent		
1934-1938	8.0	2.7	5.4
1939-1943	7.7	2.4	5.2
1944-1948	7.2	2.4	4.8
1949-1953	5.6	2.1	3.6
1954-1958	5.1	1.6	3.5
1959-1963	4.3	1.4	2.9
1964	b/	1.6	3.1
1965		1.4	

a/ Per capita disappearance is for all plums and prunes.

b/ Blanks indicate no data available on a comparable basis; canned product weight, 1965, .3 pound per capita and dried prunes, product weight, 1965, .64 pound per capita.

Source: See Statistical Sources, infra, pp. 171ff.

TABLE 87

Plums: United States Per Capita Disappearance--Canned
Annual Averages, 1934-1938 to 1959-1963
Annual, 1964 and 1965

Period	Canned
	pounds per capita, product weight[a/]
1934-1938	.6
1939-1943	.6
1944-1948	.6
1949-1953	.4
1954-1958	.5
1959-1963	.3
1964	.3
1965	.3

a/ Fresh plums: Factor used for pounds farm weight from pounds canned, .663. This represents an average relationship only.

Source: See Statistical Sources, infra, pp. 171ff.

Although there is the possibility that some of the canned plums recorded in these figures are actually canned purple plums so that all figures may be slightly high, it is quite clear that the per capita consumption of canned plums was static for the first 15 years of our survey and decreased in the last 15 years. If the 1959-1963 period is contrasted with the 1934-1938 period, per capita consumption has decreased by 50 percent from the earlier levels. However, it has not been a steady decrease since the level of annual average per capita disappearance was an increase in 1954-1958, though there is a decline since then.

Per capita consumption figures for freezing (which might include crushing) are not available. We can only conclude from that information that consumption in this category must have risen somewhat in the past five-year period if the California tonnage going into crushing has been absorbed.

The conclusion of an earlier study (1955) has been borne out even more clearly in the present survey: "From an overall view, per capita consumption rates of total plums or fresh plums have not kept pace with the nation's population and money income expansion."[1/]

Exports

Fresh plums are grown extensively on almost a worldwide basis. The fruit is grown commercially elsewhere in the Americas (although not in the amounts characteristic of the United States), in South Africa, Asia, and on the continent of Europe. The heaviest producers, with over twice the total United States tonnage, are found in Yogoslavia. West Germany produces plums in large amounts; France and Italy also grow plums extensively. The latter two are important exporting countries, however, while not enough is currently known about Yugoslav exports to discuss possible trend effects.

Canada is the principal destination of United States fresh plums for export. Seven thousand tons of fruit, on the average, have been imported annually in the 1960's. For example, 6,940 short tons went to Canada in the fiscal year 1964-65 out of a total export tonnage of 10,000. Other markets were the United Kingdom and Venezuela. These are the more or less traditional importers of United States plums and fresh prunes. In the United Kingdom, the United States competes directly with imports from the EEC countries and Yugoslavia.

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1/ Hoos and Fuller, op. cit., p. 78.

Although in absolute terms the exports of plums and fresh prunes are not large in and of themselves, they constitute an important percentage of total fresh sales as can be seen in Table 88.

With the exception of the 1949-1953 period, fresh exports have constituted a rising percentage of total fresh sales so that over 10 percent of the crop currently goes into export channels. Without the development of new fresh markets, however, it is difficult to see how increases in plum production can be translated into increased fresh exports in the traditional markets of the United Kingdom and Europe. Canada, where population increases are not striking, cannot be assumed to absorb in the future a much greater absolute tonnage.

Trade in canned plums shows the United States a net exporter by only a small margin. Imports, in general, come into the United States from Hong Kong and Taiwan, but the United States canned plum exports seem not to have an established long-term destination. The data suggest that canned plums for United States export are subject to rather special-deal conditions--in one year, a sizable shipment to Japan; in another year, to West Germany; etc. Canada, however, is a small but relatively steady importer of United States canned plums over time.

TABLE 88

Plums and Fresh Prunes: United States Exports
Annual Averages, 1934-1938 to 1959-1963; Annual, 1964 and 1965

Period[a/]	Plums and fresh prunes	
	thousand tons	percent of fresh sales
1934-1938[b/]	6.97	c/
1939-1943	4.73	6.9
1944-1948	6.40	8.2
1949-1953	4.22	5.4
1954-1958	7.49	9.7
1959-1963	9.21	10.8
1964	11.27	10.4
1965	15.25	d/

a/ Calendar-year basis.

b/ Three-year average only, 1936-1938.

c/ No data available.

d/ Total United States fresh sales not compiled on comparable basis; based on addition of California and other United States fresh sales, it is estimated that approximately 11 percent (estimated United States sales at 137.2 thousand tons) went into exports.

Source: See Statistical Sources, infra, pp. 171ff.

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